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REFLECTIONS

ON

THE WORKS

AND

PROVIDENCE OF GOD

THROUGHOUT

ALL NATURE,

FOR

EVERY DAY IN THE YEAR.

TRANSLATED FROM THE GERMAN OF

CHRISTOPHER CHRISTIAN STURM.

IN TWO VOLUMES.

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CONTENTS OF VOL. I.

	Page
MEDITATIONS on New-year's day	1
The blessings granted to us by God in winter	3
Daily proofs of Divine Providence	4
The various uses of fire	5
Winter amusements	6
God's providential care of animals during the winter season	9
The pleasures of winter	11
Vegetables which preserve their verdure in winter	13
Singular state of man when asleep	14
Advantages of the climate we inhabit	16
The fertility which snow gives to the earth	18
Contemplation of the starry heavens	20
Discoveries made by the microscope	23
Advantages of night	24
Reflections on myself	26
The ill effects of extraordinary cold	28
The repose of nature during winter	29
The Laplanders	31
The wise ordinance of our globe	34
Short meditations on the works of God, drawn from the Holy Scriptures	35
Wonders of the human voice	38
The duty of reflection in winter	39
The fear of spectres	41
Subterraneous fires	42
On comets	44
Snow	46

Page
The rapidity with which human life passes away . 47
Frost sometimes seen on windows 49
The use of bread 51
Our duty in regard to sleep 52
Revolutions which are constantly in nature . . 54
Every thing in nature tends to the good of mankind 56
The influence which cold has upon health . . 58
A temperature always the same would not be good for the earth 60
The use of stars 62
The wonderful structure of the eye . . . 64
On fogs 66
The flux and reflux of the sea 68
The sun does not always appear . . . 70
Earthquakes 72
The order established by God relative to the life and death of man 74
Reflections on ice 76
The spherical form of the earth 78
On the short duration of snow 80
A short history of the creation 81
Bodily advantages which the beasts have over man 83
The moon 85
The rain waters and fertilizes the earth . . 87
Emblems of death presented to our notice in winter 89
Means to procure fire 90
The equal distribution of the seasons . . . 92
The utility of our senses 94
Elevation of the soul to God 95
Causes of heat and cold 97
Singularities in the kingdom of minerals . . 99
Daily proofs experienced of Divine Providence . 100
Tranquillity of the night 102
Winter is the image of our life 103
The utility of mountains 106
Motives for confidence in God 107

Page
An invitation to contemplate God in the works of nature 109
Bad weather 111
State of some animals during winter . . . 113
Winds and tempests 114
The aurora borealis 116
The extreme smallness of certain bodies . . 118
Winter subsides gradually 120
The human body relatively to its exterior parts . 122
The hope of spring 124
The hoar frost 125
Variety of means which contribute to the fertility of nature 126
Advantages derived from the sea 128
The difference between animals and plants . . 130
The uniformity and variety in the works of nature 132
Seeds 134
On the size and distance of the sun . . . 136
The imperfect knowledge we have of nature . 138
Utility of vegetables 140
The construction of the human heart . . . 141
The change of seasons 143
Several things which appear to be of no use . . 145
Harmony between the moral and physical world . 147
The nature and properties of the air . . . 149
There is nothing new under the sun . . . 150
Caves in the mountains 152
Circulation of the sap in trees 154
Our ignorance of futurity 155
The gradual approach of night 157
Magnificence of God in his works . . . 159
The arrangement of the seasons in the other planets 160
Paternal cares of Providence for the preservation of our lives in every part of the world . . 162
Hymn for the commencement of spring . . 164
Abuse of animals 165

Page
The motion of the earth 167
The immense riches of nature 169
Sun-rise 171
Wonderful construction of the ear . . . 172
The milky way 174
Reflections on the seeds of plants . . . 176
The blue colour of the sky 177
Utililty and necessity of air 179
Different soils of the earth 180
Necessity of repose at night 182
The magnitude of our globe 184
Generation of birds 185
Prognostics of the weather 187
The position of the sun 189
Permanency of corporeal beings 190
The use of rain 191
On respiration 194
Proofs of the goodness of God derived from the works of creation 195
Beneficial influence of the heat of the sun . . 197
Relations that all creatures have to each other . 199
The constituent parts of water 201
The propagation of plants 202
Variety of features in the human face . . . 205
God's universal care of his creatures . . . 206
Flowers which bloom in April 208
Return of the birds 210
Utility of forests 211
Pleasures which the contemplation of nature affords 213
Animals should lead men to glorify God . . 215
Hymn on the beauties of spring 217
The system of the world 218
Reflections on the blossoms of trees . . . 219
Continual revolutions and changes in the earth . 222
An invitation to seek God in the works of nature . 224
The dawn of day 225

Page
Wonders of vision 227
Spring renews the face of the earth . . . 229
The germination of seeds 230
The chicken in the egg 232
On the buds of flowers 234
Indefatigable labours of the bee 235
How Providence has provided food for animals . 237
The senses of animals 240
Order in the succession of flowers . . . 242
The zoophites 244
The pleasure of agriculture and gardening . 245
The tulip 247
Reflections on grass 249
Sentiments excited by the contemplation of the sky 251
The fertility of plants 253
Description of the beauties of spring . . . 255
The language of animals 256
The magnitude and number of creatures on the earth 259
Spring an emblem of the frailty of human life, and an image of death 260
Spring an emblem of the resurrection of the body . 262
The attractive power of bodies 264
Complaints of mankind, relative to certain inconveniences in the laws of nature . . . 265
Sins we are apt to commit in spring . . . 268
The harmony and patriotism among the bees . 269
The prodigious number of plants on the earth . 271
Plurality of worlds 273
Hymn for the commencement of summer . . 274
Difference between the works of nature and those of art 275
Leaves of trees 277
The vivifying power of the sun 279
The desires of the soul are infinite . . . 281
The utility of rivers 283
The variety of flowers 284

Page
Use of venemous plants and animals . . . 286
The perfume of flowers 288
The multitude of animals 290
Immensity of the firmament 292
Singularities in the vegetable kingdom . . 294
Means of happiness found in nature . . . 297
The loadstone 298
Cherries 300
Wisdom observable in the construction of animal bodies 302
The dew 305
Life and labours of the bee 307
The external parts of plants 309
Hymn of thanksgiving for the works of the creation 311
Caterpillars 312
The beginning of summer 315
The nightingale 317
The pleasures which summer affords to our senses 318
A sketch of the inward parts of the human body . 320
Electric fluid 323
The manner in which thunder is formed . . 325
Herrings 327
Eclipses of the sun and moon 329
The stalk of wheat 330
The blight 332
Hymn to the Author of Nature . . . 334

REFLECTIONS

REFLECTIONS

ON THE

WORKS OF GOD.

JANUARY I.

Meditations on New-Year's Day.

CONSIDERING this first day of the year as a re-commencement of life, I presume, from the goodness of God, to anticipate a repetition of the great and numerous blessings I have received from my birth to the present period. What may I not hope from my heavenly Father, who, from the first moment of my existence, nay, even before I was born, provided for me with so much tenderness and goodness! In my parents he gave me friends, whose fostering care supported and brought me up, and whose disinterested affection protected me in the weak and helpless state of infancy. Without their kind attentions and anxious solicitude, how could I have been preserved to enjoy the benefits I now possess?

Had I at that time been capable of reflection, I might, undoubtedly, have promised myself many agreeable hours in the course of my sublunary existence. Now that I *am* capable of it, I wish to devote myself entirely to a sense of my present happiness, and the future hopes I am permitted to indulge. I enter with the present day into a new period of life; not, indeed, so much unprovided for, nor so completely helpless, as when I first came into the world, but with equal occasion for assistance in many respects. I require friends to strew the rugged path of life with unfading flowers, to support

my sinking spirits in the day of affliction, and to warn and defend me in the hour of danger: and I implicitly rely on the paternal goodness of my God for this best of blessings. Whatever may happen during the course of the year, he has undoubtedly chosen for me a friend, who will be my adviser in difficulties, and my consoler in misfortunes; who will share with me the sweets of prosperity, and in moments of weakness will aid and support my reason.

Far from supposing myself to have been *accidentally* born of such parents, in such a part of the world, and at such a particular time; I conceive the foundation of my future destiny to have been laid from the first moment of my existence; and rest assured that the time, the place, the circumstances, and the consequences of my birth, had all been planned, by God, in the wisest manner. It was then that he fixed my fate, that he weighed the evils I was to endure, that he saw the pleasures and comforts which were to restore calm and serenity to my bosom. By his decree, many causes, then unknown, were to combine for my happiness; and every thing relating to me was to contribute towards fulfilling his beneficent views. All, indeed, that relates to myself is hidden from me; but all things are visible to the great Author of my being, and all are settled according to his decrees, which are full of wisdom and goodness. If, therefore, in the course of the present year, I experience any unforeseen misfortune, or taste of unexpected happiness, I shall consider it as resulting entirely from the will of God. Should I be called to endure the chilling blasts of penury, I will remember the protection I received in the more critical state of infancy; or if my heart be wounded by the ingratitude of a friend, I will recollect that God is able to raise me up others, in whose tenderness I may enjoy delight and consolation. Though persecution may threaten, and dangers beyond all human foresight assail me, I will yet rely on that Divine Being who protected my childhood and my youth from a thousand dangers, and trust that he will not be less the friend and supporter of my old age. What, then, can prevent my beginning this year with a tranquil mind? I look forward without anxiety, and leave my fate to the guidance of Providence.

JANUARY II.

The Blessings granted to us by God in Winter, and to which we pay too little Attention.

If we were to examine the works of God more attentively than we generally do, we should find, even in this season, many causes to rejoice in his goodness, and to admire the wonders of his wisdom.—Few persons, without doubt, are so insensible as not to feel emotions of pleasure and gratitude, when beauteous nature displays the rich blessings of spring, summer, or autumn: but even hearts the most replete with sensibility, are rarely excited to grateful sensations, when they behold the trees stripped of their fruit, and the fields without verdure; when the bleak wind whistles round their dwelling; and a chilling cold comes to freeze the earth and its inhabitants. But is it true that this season is so destitute of the blessings of heaven, as to be incapable of kindling gratitude and piety in the heart of man? No, certainly. Let us only accustom ourselves to be more attentive to the works of God, more affected with the numerous proofs of his goodness towards us, and we shall find many occasions, even in winter, to praise our Benefactor.

Consider how unhappy we should be, if, during this inclement season, we had neither fire nor clothes to keep us warm. With what goodness the Lord prevents our wants, and furnishes us, even at a period the most void of resources, with the necessaries and conveniences of life! Whilst we are enjoying the comfortable warmth of a fire, shall we not return thanks to the Lord, who gives us fuel with such profusion; that even the most indigent can obtain a necessary supply?

If it were given to mortals to examine and comprehend those various links which form the harmonious chain of nature, how great would be our admiration of Jehovah's wisdom and goodness! But, however incapable we are of forming to ourselves an idea of the *whole* of his works, the little we do understand gives us sufficient reason to acknowledge, that his government is infinitely wise and beneficent. Winter belongs to the plan he has formed. If this season did not exist, the budding spring and ripening summer would lose

many of their most fascinating charms, the fertility of our lands would be much diminished, commerce would fail in many provinces, and part of the umbrageous woods and towering forests would seem to have been created in vain. Considered in this light, winter is certainly very useful: and supposing that its advantages were not so apparent, it would be sufficient for us to reflect, that this season is the work of the Creator, as well as spring and summer; and that all which proceeds from God must be for the best.

JANUARY III.

Daily Proofs of Divine Providence.

Not to acknowledge the hand of Providence, but in extraordinary cases, is to betray our ignorance and our weakness. In the ordinary course of nature, a variety of things occur which ought to fix our attention and excite our admiration. The formation of a child in the womb of its mother, is as great a miracle of divine wisdom and power, as the creation of the first man out of the dust. And, the preservation of our life, if we reflect on the various causes and effects which combine for that purpose, is no less wonderful than the resurrection of the dead. The only difference between them is, that one happens but seldom, whilst we every day witness the other.—Hence it is that the former does not strike us more sensibly, nor raise our admiration as it would otherwise do.

My own experience ought to convince me fully, that a Divine Providence watches over the preservation of my existence. I am not certain of a single moment; since a thousand unknown and latent causes may hasten my end, congeal my blood, or stop my breath. Alas! I cannot but feel my utter incapacity of preserving my life, of removing my infirmities, and of dispersing the dangers with which I am threatened. Subject to so many mental and corporeal wants, and exposed to all the ills of affliction, disease, and imbecility, I am thoroughly convinced, that, without the tender mercies of God, I should be completely wretched. The union of my body and soul, their reciprocal and continual acting on each other, are inconceivable, and neither depend on my will nor my power. The beating of my pulse,

and the circulation of fluids within me, go on without interruption, and without my being able to contribute to them in the smallest degree. Every thing convinces me that my faculties, my state, and the duration of my being, do not depend on my own will; but that the Almighty, by a secret and absolute power, maintains in me strength, motion, and existence. If my respiration be not stopped; if my blood still circulate; if my limbs have not yet lost their activity; if the organs of my senses retain their proper functions; and if my thinking and reasoning faculties be still preserved; it is to God alone I am indebted for such inestimable blessings. But, why do I reflect so seldom, and with so little gratitude, on the ways of Providence? Ought not the reflections which now offer themselves, to have ever been imprinted on my heart? Ought I not, at least, every morning and evening, to muse upon, to admire, and gratefully to acknowledge the blessings of my Creator? How just that I should do so! and, that, by this homage, I should distinguish myself from the insensible brute, which has not received the faculty of contemplating the works of God!

JANUARY IV.

The various Uses of Fire.

Fire is, in some degree, the universal instrument of all the arts, and contributes most essentially to the conveniences of life; and, in order that man might derive continual assistance from this element, the Creator has diffused its principles throughout nature, in the water, in the air, and in all oleaginous substances.

How very useful are all those combustible matters which supply us with fuel, and without a sufficiency of which, we should at once be deprived of the greatest advantages, and exposed to inconveniences of a most serious nature! Were it not for the fire, which cheers and illumines our habitations in the dreary months of winter, a considerable portion of our time must be passed in insupportable darkness. Deprived of artificial light, our most agreeable occupations must terminate at sun-set, and we should be reduced to the sad alternative of remaining motionless, or of wandering in terror and obscurity, exposed to a thousand dangers.

The greatest part of the aliments the earth produces would be unwholesome and void of nourishment, were they not softened and prepared by the action of fire: nor should we be able to obtain so many other necessaries and conveniences, if workmen and artists did not procure them for us by the assistance of this element. Without fire we should be incapable of giving to our garments so rich a diversity of colouring; our metals could neither be melted nor rendered ductile; glass could never be formed from the sand, nor could lime acquire the consistence of stone; nature, herself, would be divested of her most attractive charms, and all her treasures would become comparatively useless.

To prove the importance of this blessing, however, without traversing the various paths of nature, we need only contemplate our own apartment, in which a genial warmth is diffused, to shield us from the impressions of the external air. During hard frosts we should become inactive, and subject to many unpleasant sensations, if the fire did not communicate to us its invigorating influence; the sufferings of the aged and infirm must also become more acute; and what would become of the little infant if its delicate limbs were not strengthened by gentle warmth? O unfortunate poor! who suffer all the rigor of this inclement season, and who are ready to sacrifice a part of your small pittance of bread, in order to procure fuel to warm your shivering limbs; how my heart bleeds for your calamities! Your distressed situation recals to my mind a portion of my own felicity, which has hitherto occupied too little attention; and while it calls for the warmest gratitude towards my heavenly Father, it strongly urges me to relieve, according to my ability, those poignant distresses from which I am mercifully exempted.

O my God, my Creator, and my Benefactor! to whose paternal care I am indebted for all the pleasures and advantages derived from the element of fire; condescend to look upon me, while my grateful heart expands with praises and thanksgivings.

JANUARY V.

Winter Amusements.

During this season, which many people, through prejudice, consider altogether cheerless and gloomy; eve-

ry one, according to his taste, endeavours to procure such amusements as appear calculated to abridge the tediousness of the long winter evenings. Many, indeed, seem to think of nothing but compensating for the severity of the cold, by devoting themselves to dissipation, noisy company, or other transitory pleasures; and it is truly distressing to witness the efforts such characters make to shorten, by indolence or frivolous pursuits, those days which are already too short.

The space of a day is generally filled up by a train of employments, which are unworthy the dignity of man, and the purposes of an immortal soul. Some hours after sun-rise, the voluptuary quits his bed. During breakfast, he forms projects for the amusements to which he means to sacrifice this new day. Then, abandoning himself to idleness, he waits the hour for a second repast: it comes, and he gives himself up, without bounds, to the pleasures of the table. Satisfied, or rather surfeited, with the immoderate use he has made of it, he throws himself on a couch, in order to recruit his exhausted powers. The hour comes in which he is to go to a tumultuous company, unless the noisy circle is to assemble at his own house. He sits down to play; and, for the first time since sun-rise, shows that he has a soul; and, with cards in his hands, the hours appear to him to pass rapidly. At length this sensual creature goes from play to his supper, and from supper to bed; but sleep does not tranquillize his spirits, nor wrap his senses in sweet oblivion: restlessness, or frightful dreams, disturb the hours allotted to repose.

How ingenious is man in multiplying ways to shorten his time with trifling amusements! Sometimes the chase induces him to quit the town that he may enjoy the gratification of pursuing the timid hare, or the panting deer, till the poor animal, completely exhausted, sinks at the feet of its cruel enemies, whose inhuman triumph disturbs the quiet of the country and the repose of nature. Sometimes, allured by the meretricious charms of the ball, he loses his innocence, and becomes the sad victim of disease and sorrow. Enchanted by the pleasures of public places, he imperceptibly imbibes sentiments and passions which render him incapable of relishing genuine pleasure; and the feasts and other en-

tertainments which he frequents too often bring sin in their train.

Having noticed a sufficient number of winter diversions, I must beg leave to remind my fellow-creatures of their duty in regard to these amusements. I do not blame the love of society, which is particularly necessary at this season; but let not this inclination degenerate into a strong passion, lest it take possession of your whole soul. Supposing even, that in your social parties nothing passes contrary to virtue and morality; they may notwithstanding prove hurtful to you, by consuming too much of your time, causing you to neglect your duties, or deranging your domestic economy.—Pleasures are not to form our daily business, but are merely allowed by our Creator for purposes of relaxation. To cherish too keen a relish for them, therefore, instead of answering the purpose they were designed for, is to seek enjoyments, which may, in the end, prove sources of regret and remorse. I particularly advise you, to be very attentive to the choice of your social amusements. Do not waste your time in diversions which you cannot enjoy without endangering your virtue, your reputation, or the welfare of your family. Let not those foolish pleasures, which may wound your neighbour, excite his complaints, draw tears from his eyes, or make you neglect the duties of society and religion, ever find access into your heart. Do not let even the most innocent pleasures so far take possession of you, as to make you insensible to the pure and solid pleasures of Christianity, or deprive you of your relish for serious occupations.

O God! govern my heart with thy gracious influence, and grant that I may never forget thee in the enjoyment of earthly pleasures. May the remembrance of thy presence guard me against temptations in the midst of the world! May I ever be more attached to the exercise of my duties as a Christian, a citizen, and a father, than to those pleasures which so easily divert me from my obligations, or, at least, diminish my zeal for the cause of virtue. Why should I be so earnest about trifling amusements, whilst, even in these winter days, I find purer pleasures within my reach? The contemplation of the works of God in nature, the stormy sky, the fields covered with snow, and a thousand

other phenomena of winter, serve at once to amuse the mind, and to increase a spirit of devotion: for, even in the most cheerless season, the works of the Lord are great: and he who will reflect upon them, will enjoy a continual variety of pleasures.

JANUARY VI.

God's providential Care of Animals during the Winter Season.

Millions of rational beings, dispersed over the different countries of the world, are provided, at this season, with all things necessary to their support and comfort. The greater the number of men is, the more varied are their wants, according to their condition, age, and mode of life: and in proportion as we feel our inability to form a plan, or take the requisite measures for our own preservation, our admiration and gratitude should be excited by those wise and beneficent arrangements which the Creator has made for this important purpose.

But there would be a sort of selfishness in confining the divine goodness and wisdom to the preservation of the human race; without remembering the care which his providence also takes of other animals during winter; a care which extends to creatures much greater in number on the earth, than the intelligent beings who inhabit it; and which affords the most astonishing proofs of the divine wisdom, power, and goodness.

That the prodigious number of animals inhabiting this terraqueous globe, should find food or habitation in *summer*, is not surprising; because all nature then is disposed to concur towards that end. But that, in *this* season, the same number of creatures—those millions of quadrupeds, reptiles, birds, insects, and fishes—should continue to exist, is a circumstance which must excite the astonishment of every being capable of reflection. Nature has provided most animals with a covering, by means of which they can sustain the cold, and procure themselves sustenance in winter, as well as in summer. The bodies of wild beasts which inhabit forests and deserts, are so formed, that the hair which covers them falls off in summer, and grows again in winter, till it becomes a fur, which enables them to

endure the most severe weather. Other kinds of animals find an asylum under the bark of trees, in crevices of old buildings, or in hollows of rocks and caves, when the cold obliges them to quit their summer dwelling. Into these retreats some carry before-hand a timely supply of food; some subsist on the fat they had accumulated during summer; and others pass the tedious chilly months in a state of torpid insensibility. Several species of birds possess an instinct which propels them at the commencement of winter to quit the northern countries, and they are then seen flying in immense flocks towards more genial climes; while others, not designed to leave their native shores, find an ample supply of insects in moss, and in the crevices of the bark of trees. Several kinds of quadrupeds carry provision, in the summer time, into caves, and feed on it in winter: others are obliged to seek their subsistence under the snow and ice. Various sorts of insects and fishes confined within frozen marshes and rivers, still preserve their vitality; and many means are probably used by an over-ruling Providence, for the preservation of its creatures, with which the sons of men are totally unacquainted.

Christian! adore, with me, our almighty and gracious Preserver; who, notwithstanding the sublimity of his nature, and the grandeur of his majesty, does not disdain attention to the weakest creature existing under heaven. From the elephant to the mite, all animals are indebted to him for their life, their habitation, and support; and even where nature seems sterile and destitute of resources, his goodness provides means to supply her defects. Let this consideration strengthen our confidence in the Almighty, and banish from our hearts all painful solicitude concerning our preservation during the months of winter. That adorable Being who provides for the animal tribes will not abandon mankind: he who shows himself so great in little things, will appear still greater in matters of more importance.

The God who provides a covering for animals, knows how to clothe us. He who points out to them a retreat in the caves of the mountains, will find for us an asylum to pass our days in quietness: and the same divine hand which has prepared for their sustenance, even under the snow and ice, will be able to provide for us in the most critical seasons.

Finally, let these reflections induce us, according to the extent of our abilities, to imitate the benevolent cares of Divine Providence, in contributing to the preservation and felicity of our fellow-creatures, and of all those animals who look up to us for protection and support. To refuse to these the nourishment and indispensable conveniences which they require, is to act in manifest opposition to the will of our common Parent, whose provident regards extend to the most inferior classes of animated nature. And if *animals* have such powerful claims upon our attention, how much stronger is the obligation to alleviate the distresses of mankind, to supply the wants of the indigent, and to relieve, by timely assistance, those who might otherwise sink under accumulated sufferings!

JANUARY VII.

The Pleasures of Winter.

EACH season has its peculiar pleasures and beauties: and even the winter, however destitute of charms it may appear to some people, fulfils, in this respect, the design of our Creator. For the sake of those, who, through ignorance or prejudice, murmur against this season, I will display the pleasures it affords, both to our senses and to our hearts.

Is it not a most agreeable sight to behold the morning dawn shining on a country covered with snow? The thick fog which recently veiled the landscape is suddenly dissipated; a light frost whitens the tops of the trees; and the hills and valleys are beautifully tinged by the reflection of that glorious luminary, whose benign influence, giving new life to every creature, invites the linnet to quit the sequestered grove, and the sparrow to flutter among the sparkling branches.

In proportion as nature seemed dead in the absence of the sun, so much the more lively she appears, when re-animated by it; while her new and white apparel delights the eyes of the contemplative traveller. Have you ever attentively considered the formation of the snow? Have you reflected on the wonders which a single flake of this substance contains? Admire, on one hand, the regularity, the symmetry, of its form; and, on the other, the infinite number of the same flakes

which fall from the air. What an agreeable sight, to see the hills, the forests, and the groves, clothed with a dazzling splendor! What a charm results from the assemblage of all these objects! Behold, (for the eye can scarcely have enough of this sight, however accustomed to it)—behold the brilliant dress of those hedges! See the forests bending under the white curtain which covers them! The whole offers to our view the appearance of a vast desert, over which a uniform veil of dazzling white extends itself.

What idea shall I form of those, who, at the sight of these phenomena, feel none of those pleasing sensations which the Creator meant to convey? They who do nothing, at this moment, but murmur against the laws of nature, how much are they to be pitied! If the prospect of nature, in winter afford them no pleasure, I fear they will be equally insensible to the spring with all its charms. O ye who admire the designs of Providence, see how gracious the Lord is! how adorable his wisdom, and how unbounded his mercy, in all that relates to winter! Nature, however barren she appears to us, is, notwithstanding, a divine master-piece; and it is our blindness only which conceals her beauties.—In every part there shines some ray of the divine wisdom, and still more in what is concealed from us. We do not trace her through all her ways; and we are only attentive to what strikes our senses, and flatters our inclination. And, in this respect, too many are like the irrational brutes, who see the sun, the snow, and the other phenomena of nature, without looking up to the Lord, as the source whence all things proceed in heaven and on earth.

What sweet satisfaction must fill the minds of those persons who accustom themselves to meditate seriously on the works of God, at this season of the year! The air may be agitated by storms, the sky be clothed with blackness, and nature be despoiled of her richest charms; but *they* will enjoy true pleasures, in discovering, throughout all things, traces of the wisdom, power, and goodness of their Creator. However limited their natural faculties may be, they will always find subjects to employ their minds. They will have no occasion to seek with eagerness the dissipations of the world, or the amusements of play and dancing; they will find, either

in retirement, or in the midst of their friends and children, pleasures ever genuine and ever varied.

O my soul! apply thyself to the enjoyment of these delights. Let the works of God frequently employ thy thoughts, and these reflections will soften the sorrows of life. Raise thyself to the Almighty by that chain of beings he has created, and let him be, at all times and seasons, the object of thy praise.

JANUARY VIII.

Vegetables which preserve their Verdure in Winter.

The earth may now be compared to a mother who has been robbed of her most promising children. She is desolate, and deprived of the charms which varied and embellished her surface. However, she is not deprived of *all* her offspring. Here and there, some vegetables are still to be seen, which seem to defy the severity of winter. Here the wild hawthorn shows its purple berries, and the laurestina displays its blossoms in clusters, crowned with a foliage that never fades. The yew tree rises like a pyramid, and its leaves preserve their verdure; the weak ivy still creeps along the walls, and clings immoveable, whilst the tempest roars about it; the laurel has lost none of its summer ornaments; and the humble box tree shows here and there, in the midst of the snow, its evergreen branches. These trees, and some others which preserve their verdure in the coldest climates, and in the severest seasons, may be considered emblematic of the durable advantages which *he* possesses whose mind is cultivated, and whose temper is sweet and serene. The splendor of dress, however it may dazzle the eyes of the vulgar, is trifling and transient; the most brilliant tints are liable to fade; and exterior beauty is but of short duration; but virtue has charms which survive them all. "The man who fears the Lord is like a tree planted by the side of a river: it brings forth fruit in due season, and the traveller blesses the shelter afforded by its evergreen and umbrageous branches."

What a delightful image is this of a pious man! He borrows not his value from the external and arbitrary goods of fortune; but possesses true ornaments within himself. The storms of adversity may sometimes shake,

but cannot overpower him; and he soon rises again above the stormy regions. If unexpected misfortune reduce him to indigence, he is still rich, in the favour of God, a good conscience, and the hope of a blessed immortality.

This meditation leads me to the idea of a benevolent old man. In the winter of his life, he resembles the plants which preserve their verdure, even in this rigorous season. How many storms of fortune has he supported with constancy! How many attracting objects has he seen wither! Yet he exists, while most of his contemporaries have disappeared. A mild cheerfulness, the happy remains of his spring, is still legible in his countenance. However wrinkled his forehead may be; whatever ravages the hand of time may have imprinted upon his body; he is still adorned with virtues which make amends for the loss of exterior charms. He grows young again in his progeny; and his wisdom, integrity, and experience, still serve for examples and lessons to his children's children.

JANUARY IX.

The singular State of Man when asleep.

We need not have recourse to extraordinary events in order to learn the omnipotence and wisdom of God. The most common occurrences, the daily changes which happen in nature, and in our own bodies, may suffice to convince us, in the strongest manner, that it is a Being infinite in wisdom, goodness, and power, who has created the world, and who directs every event in it. Of the innumerable wonders of which he is the author, I will now mention one, which, though it occur daily, is nevertheless deserving of our regard and admiration. How often have those persons been refreshed by sleep, who possibly have never reflected on that state; or, at least, have not considered it as one of the most remarkable effects of divine goodness! When balmy slumber weighs down their eye-lids, they think that nothing extraordinary happens, but suppose the animal machine adapted to that situation, and impute their inclination for sleep to causes purely natural.

But perhaps sleep may be considered in two different points of view. On one side, there is nothing in it which

may not result necessarily from our nature; on the other, there is in this natural effect something so striking and wonderful, that it well deserves a closer examination. In the first instance, it is a proof of the wisdom of our Creator, that we go to sleep imperceptibly. Let us attempt to ascertain the precise moment when our faculties are seized by this power: that very attention will preclude its approach; nor shall we be able to sleep till the idea is completely dissipated. Sleep comes uncalled. It is the only change in our manner of existence in which reflection has no share; and the more we endeavour to promote it, the less we succeed. Thus, God has directed sleep that it should become an agreeable necessity to man; and he has made it independent both of our reason and our will. Let us pursue this meditation, and reflect on the wonderful state we are in during sleep. We live without knowing or feeling it. The beating of the heart, the circulation of the blood, the digestion, the secretion of the juices, in a word, all the animal functions, continue and operate in the same order. The activity of the soul appears, for a time, in some degree suspended, and gradually loses all sensation, and every distinct idea. The senses deaden, and interrupt their usual operations. The muscles by degrees move more slowly, till all voluntary motion has ceased. This change begins in the forehead, then the muscles of the eye-lids, the neck, the arms, and the feet, lose their activity to such a degree, that man seems to be metamorphosed into the state of a plant. The situation of the brain becomes such, that it cannot transmit to the soul the same notions as when awake. The soul sees no object, though the optic nerve is not altered; and it would discover nothing, even if the eyes were not closed. The ears are open, and yet they do not hear. In a word, the state of a person asleep, is wonderful in all respects, and is visibly the image of that into which we are brought by death. Sleep and death are so nearly alike, that it may be useful to consider their analogies. Who, in reality, can think of one without recollecting the other? As imperceptibly as we now fall into the arms of sleep, we shall one day fall into those of death. It is true, that death often gives warning of its approach several hours or days before: but the real moment in which it seizes us, happens sud-

denly; and when we appear to feel the first blow, it will be already the last. The senses, which lose their functions in sleep, are equally incapable of acting at the approach of death. In the same manner, the ideas are confused, and we forget the objects which surround us. The moment of dissolution may probably be as agreeable as that of falling into a profound slumber; and the convulsions of the dying may possibly give them no more painful sensations than the circumstance of snoring to those who are asleep.

Let a devotional spirit cherish and frequently renew this meditation. Every time we retire to rest, let us reflect on all the wonders of balmy sleep, and bless that almighty Preserver, who does such great things for us while our senses are wrapped in sweet oblivion. Great things, indeed! for if he did not guard us with a protecting hand, to how many dangers should we be exposed during the night! If God had not directed and supported the pulsation of our hearts, the circulation of our blood, and the motion of our muscles, the first sleep after we were born would infallibly have delivered us into the arms of death.

Serious reflection upon these things will point out the duties we owe to so great a Benefactor, and will impress our hearts with love and gratitude to that Adorable Being who proves himself to be *our* God in every circumstance and upon all occasions.

JANUARY X.

The Advantages of the Climate we inhabit.

Let us learn to appreciate the peculiar happiness of our situation, while the blessings of our heavenly Father are poured upon us on every side. Our waving forests, fertile hills, and verdant meads; the pure and temperate air which surrounds us; the regular succession of day and night, and the variations which attend the revolving seasons, all announce the Creator's goodness, and the extent of our own felicity. Can we then be discontented with our lot, or complain of the economy with which God distributes his favours? or shall a murmur escape our lips because the rays of the sun do not cheer us with perpetual summer, or because an e-

qual degree of warmth is not always felt under our zone? What ingratitude, and at the same time what ignorance, does such conduct display! We know not, indeed, what we desire, nor of what we complain.

Is it through pride or inattention that we do not acknowledge the divine goodness, which has favoured our country in so eminent a degree? We frequently murmur at the severity of winter, and are absurd enough to envy the inhabitants of places where change of seasons is unknown: yet to the *winter* we are indebted for the peculiar salubrity of our climate. In hot countries epidemic disorders are more prevalent than in those where the sun shines with inferior ardour: the population is also comparatively thinner, and the natives are seldom distinguished by strength or longevity. And when the cold is at the highest possible degree with us, we are still happier than the inhabitants of those countries where it is so much greater, and lasts so much longer, that our severest winters would appear to them to have the mildness of autumn. Let us compare, in imagination, our lot with that of the inhabitants of the northern part of our globe. Here the solar beams occasionally illumine our most cloudy days, and reanimate our spirits: there the day, dark and cheerless as the night, is never enlivened with a single ray. Here, indulging over the blazing hearth, or reposing in bed, we can defy the most rigorous cold: there the unhappy natives are exposed to beasts of prey, more terrible than the inclement air; nor can their wretched huts afford a secure asylum against either of these enemies. With us the pleasures of society soften the inconveniences of winter; while the unhappy mortals near the north pole, are almost shut out from the rest of the earth, and live dispersed in clans. We, too, are blessed with the regular succession of day and night; whilst those unfortunate creatures pass most of their time in darkness. Finally (and this is the most essential advantage), after four or five stormy disagreeable months, we enter into a season, the charms of which amply compensate for all we have suffered: they, on the contrary, are doomed to exist amidst perpetual winter, and to contemplate nature in a state of constant death, without the most remote hope of ever seeing it revive.

Let these considerations induce us to bless the

bountiful hand which has appointed for us so happy a lot. Far from lamenting our fate, let us glorify the Lord, who has planned it with so much wisdom and goodness; and if, at present, in our houses, or in the society of friends, we are enabled to pass the winter agreeably, let us think of those unfortunate people who are deprived of these pleasures, to which custom, and the very enjoyment of them, make us insensible. When we examine nature, such as she appears in our country, let us say, penetrated with joy and gratitude, "I give thee thanks, O Lord, for having fixed me in a climate where thy bounty is so magnificently displayed. May my joy, my gratitude, and my endeavours to please thee, be proportionable to the blessings with which I am favoured preferably to other people; may the fertility and beauty of the country I was born in, excite me to study and contemplate thy works and thy blessings; and may I one day arrive at that heavenly habitation which my Saviour has prepared for me, and there adore, with all the nations of the world, the miracles of thy goodness."

JANUARY XI.

The Fertility which Snow gives to the Earth.

Judging from mere appearances, we might be induced to assert, that snow could not be useful to the earth, but, on the contrary, that its cold humidity must be detrimental to trees and plants. The experience of centuries, however, dissipates this prejudice, and informs us that, to defend corn, plants, and trees from the dangerous effects of cold, nature could not have provided a better covering than snow: as this substance shelters the earth from freezing winds, maintains the warmth necessary for the conservation of seeds, and even contributes to swell them by the degree of nitre with which it is impregnated. Thus, at this early season, God prepares what is necessary for the support of the beings he has formed; and provides before-hand for our food, and that of an infinite number of animals.

Nature is always active, even when she appears to us to rest, and she is doing us real services when she seems to refuse them. Let us admire in this the tender care of Divine Providence. Behold, in the severest

season, the attention to our welfare, and how, without any labour of ours, nature silently prepares for us all its treasures. With such striking proofs of beneficent care, who can give way to fears and anxiety? What God does every winter in nature, he does daily for the preservation of mankind. What at first view appears to us useless or hurtful, contributes in the end to our happiness; and, when we think that God does not interest himself about us, it is then that he is forming plans which are hidden from us, and which, in discovering themselves, effect our deliverance from particular evils, and obtain for us such blessings as we did not dare to expect.

In the mean time, God has not only designed that the snow should cover the earth, but that it should also make it fruitful. How much care and trouble it costs us to give the necessary manure to the fields: yet how easily is it done by nature! The snow, which possesses this virtue, is much more useful than rain and other manures. When it is softened by the sun, or a temperate air dissolves it by degrees, the nitre it contains penetrates the earth to a considerable depth, and vivifies the various tribes of vegetative nature.

Who is there that will not remember, on this occasion, the emblem under which God represents the wholesome efficacy of his word? "As the rain cometh down and the snow from heaven, and returneth not thither, but watereth the earth, and maketh it bring forth and bud, that it may give seed to the sower, and bread to the eater, so shall the word be that goeth out of my mouth: it shall not return unto me void, but shall accomplish that which I please, and prosper in the thing whereunto I sent it." We live at a time in which this prediction is accomplished in a very striking manner: whole provinces, kingdoms, and considerable portions of our globe which were formerly buried in the darkest ignorance, superstition, and incredulity, are now enligtened by the Gospel. We feel the happy influence, even in our days, of the word of the living God. How many hardened hearts has it triumphed over! How many good works, and pious fruits, has it produced! O may the divine grace ever find in our hearts a soil well disposed to feel its salutary influence!

JANUARY XII.

Contemplation of the starry Heavens.

The sky exhibits to our view, in the night season, a most splendid and sublime scene, which must excite the astonishment of every serious observer of nature. But whence comes it that so few consider the firmament with attention? I am willing to believe, that, in general, it proceeds from ignorance; for it is impossible to be convinced of the greatness of the works of God, without feeling a species of divine rapture. O! how I wish my reader to participate in this heavenly pleasure! For this purpose raise your thoughts towards yon azure canopy; and the very *names* of the glorious bodies which are strewed in that immensity of space, may suffice to fill you with wonder and admiration at the greatness of Him by whom they are, and were created.

In the centre of our system the sun has established his throne. This majestic orb is more than a million of times larger than the earth, and is distant from it at least ninety-five millions of miles: yet notwithstanding this prodigious distance, it produces the most sensible effects upon our sphere. Round the sun revolve seven planets, with their attendant satellites: these are opaque bodies, which receive light, heat, and probably interior motion, from the central luminary. The seven primary planets are known by the names of Saturn, Jupiter, Mars, Venus, the Earth, Mercury, and Georgium Sidus. Of these, Mercury is nearest the sun; and for that reason is mostly invisible to the astronomer. As he is near fourteen times smaller than our earth, he contributes but little to adorn the sky. Venus follows him, and is sometimes called the morning, and sometimes the evening star. She is one of the brightest of the heavenly bodies, whether she precede the rising of the sun, or succeed his setting. She is larger than the earth, and is about sixty-eight millions of miles distant from the sun. After Venus comes our earth; round which the moon moves, as a secondary planet. Mars, which is the fourth planet, is seven times smaller than our globe; and his distance from the sun is one hundred and forty-four millions of miles. Jupiter, with his belts, appears, to the naked eye, of greater magni-

tude than any of the fixed stars, and always distinguishes himself by his splendor in the starry heavens; his light nearly equalling that of Venus in all her glory.—How small is our earth in comparison with this planet! There would not be less than *fourteen hundred* globes like ours necessary to form *one* equal in size to that of Jupiter. Saturn, whose distance from the sun is upwards of nine hundred millions of miles, was thought the remotest planet, until the discovery of the Georgium Sidus; whose distance is eighteen hundred millions of miles, and its magnitude eighty-nine times greater than our earth.

The sun, with all the planets which accompany it, is but a very small part of the immense fabric of the universe. Each star, which appears to us no larger than a brilliant set in a ring, is in reality an immense body probably equal to the sun both in size and splendor, and also the centre of a planetary system. It is in this light we must consider the stars which shine over our heads in a winter night. They are distinguished from the planets by their brilliancy, and because they never change their places in the sky. According to their apparent size, they are divided into six classes, which comprehend altogether about three thousand stars: but, notwithstanding the attempts of astronomers, they are certainly innumerable; many of them being dispersed so widely in the immensity of space, that the most piercing eye cannot discover them without difficulty. Telescopes, indeed, have opened to us new paths in the heavens, and brought some thousands of stars into view; but it would be a very senseless pride in man to try to fix the limits of the universe by those of his telescope.

If we reflect on the distance between the fixed stars and our earth, we shall have new cause to admire the immensity of the creation. Our senses alone convince us, that the stars must be much remoter from us than the planets. Their apparent minuteness only proceeds from their distance from the earth. And, in reality, this distance cannot be measured; since a cannon-ball, supposing it always to preserve the same degree of velocity, would scarcely, at the end of six hundred thousand years, reach the star nearest our earth. What, then, must the stars be? Their prodigious distance,

and their brightness, tell us, they are *suns* which beam upon us, not with borrowed light, but with rays essentially their own—suns which the Creator has sown by millions in immeasurable space, and which are destined to communicate the blessings of light and warmth to the terrestrial globes which revolve around them.

In the mean time, all these observations, however surprising they appear, lead us, at the utmost, but to the first limits of the creation. If we could transport ourselves beyond the moon, and reach the highest star over our heads, we should discover new skies, new suns, new stars, new systems of worlds, and those perhaps still more magnificent. Even there, however, the dominions of our great Creator would not terminate; but we should find, with the greatest surprise, that we had only arrived at the frontiers of the place of worlds. The little we do know of his works, however, is sufficient to make us admire and adore his infinite wisdom, power, and goodness. Here, then, let us stop, and reflect, how great must be that Being who has created those immense globes! who has regulated their course, and whose mighty hand directs and supports them! And what is the clod of earth we inhabit, with all the magnificent scenes it exhibits, in comparison of the beauty of the firmament? Though it were annihilated, its absence from the universe would be no more observed than that of a grain of sand from the sea-shore. What are provinces and kingdoms in comparison of those worlds? —nothing but atoms, which wanton in the air, and are seen in the sun-beams. And what am I, when I reckon myself among this infinite number of God's creatures! How I am lost in my own nothingness! But, however little I appear in this, how great do I find myself in other respects! "How beautiful this starry firmament, which God has chosen for his throne! How admirable the celestial bodies, whose splendor dazzles, and whose beauty enchants me. However, all beautiful as it is, and richly adorned, yet this sky is void of intelligence: it knows not its own beauty; whilst I, formed out of the clay by my Creator's power, am endued with sense and reason." I can contemplate the beauty of those radiant orbs; and, what is of more importance, I am in a certain degree acquainted with their sublime Author, and can discover some rays of his glory. O may the

study of his works, and the contemplation of his nature, be my constant employment, till, by a glorious change, I rise above the starry regions!

JANUARY XIII.

Discoveries made by the Microscope.

NATURE is the same in small objects as in those of greater magnitude; and whether we contemplate the structure of the mite or of the elephant, we shall find them both formed with the same degree of harmony and propriety. The only difference is, that the weakness of our sight prevents us from penetrating into the nature and organization of the small bodies, which often escape our observation, unless we have recourse to the assistance of glasses. Microscopes have made us acquainted with a new world of vegetables and animals: they have taught us that many objects invisible to the naked eye, are possessed of form, parts, and extension. Let us mention some examples, to excite our devotion toward that God, whose glory manifests itself so wonderfully in the minutest objects.

Every grain of sand appears round, when we examine it with our eyes only, but, by the assistance of a glass, we may observe that one grain differs from another both in size and figure; some being perfectly round, some square, and others conical, but mostly irregular. And what is still more astonishing, by means of a microscope, which makes objects appear a million of times larger than they are, we may discover, in a grain of sand, a new animal world; its cavities being, in reality, the dwelling-places of insects. In cheese, there are little worms called mites, which to the naked eye appear mere dots, but, seen through a microscope, they prove to be insects of a singular figure, which have not only eyes, mouth, and feet, but a transparent body, furnished with long hair, in the form of prickles.

As for the vegetable kingdom, it is found in the mouldy substance which usually adheres to damp bodies. This exhibits a thick forest of trees and plants; where the branches, leaves, flowers, and fruits, can be clearly distinguished. The flowers have long, white, transparent stalks. Before they expand, the buds are but little green balls, and they do not become white till

they have blown. You would as little expect to find these objects in mouldy substances, as that the dust which covers the wings of the butterfly should be a collection of little feathers, if the microscope had not proved the truth of it. But we have no occasion to carry our researches to remote objects: let us limit them to what relates to ourselves. Examine, with a microscope, the surface of your skin, and you will find that it resembles the scaly skin of a fish. It has been computed that a grain of sand could cover 250 of these scales, and that one only of these covers 500 pores, consequently, a space, equal to a grain of sand, contains 125,000 pores.

Thus we discover the greatness of our Creator even in those things which prejudice has taught us to consider as mere trifles: and while we contemplate the prodigious number of creatures which he has diffused over the earth, we should remember that those we see are, in all probability, the *least* of his works. How many interesting objects are concealed from our view! Could we explore the bottom of the ocean, the beds of rivers, or transport ourselves to distant planets, how would our astonishment be increased by our enlarged view of animated nature! "How wonderfully we experience that God has displayed as much wisdom in the most minute objects as in the greatest." Nature proves herself as complete and regular in her smallest productions, as in those prodigious bodies whose circumference is calculated by millions. The Creator provides with the same goodness for the wants of the insect which crawls in the dust, as for those of the whale which resembles an island in the midst of the waves. In this respect, let us imitate the example of the Deity. Let our humanity and benevolence be extended to the meanest of creatures, since our common Author vouchsafes to preserve their existence.

JANUARY XIV.

The Advantages of Night.

We are certainly deprived of some pleasure, when the sun withdraws his cheerful light at an early hour, and the greatest part of our time is passed in darkness. Yet, we have no cause to complain of this arrangement in

nature. As the mixture of pleasure and pain, of natural good and evil, is always wisely ordained; so do we find the same provident goodness of the Almighty in this remarkable variation in our climate: and it may be reasonably asserted, that the winter nights are more advantageous than hurtful to us; or, at least, that their apparent inconveniences are compensated or softened by a thousand blessings too little acknowledged. Should we be as well convinced of the utility of the sun, or would its light produce the same pleasing effects, if we were not taught its value by an occasional privation of its advantages? Each night may remind us of the mercy of God, which has diffused light and beauty over the earth for the benefit of his creatures; and may also teach us to reflect on the misery we should endure if the gloom of night were not appointed to be dispersed by returning day. And is not even darkness itself advantageous to us, by inviting, through the silence and tranquillity which attend it, to refreshing sleep. How many workmen are there who during the day exhaust their strength in our service, and whose labour, hard in itself, is rendered still more severe by many disagreeable sensations! these bless the night which suspends their toils, and brings them balmy rest and refreshment. In general, we are too selfish, in measuring the advantages and inconveniences of night, merely by the benefit or injury we suppose ourselves to derive from it.

Though long nights may confessedly be disagreeable to some, to many others they are an important blessing. In certain cases, night is peculiarly favorable to the hunter and the fisherman: without it, astronomers could never have guessed the distance, magnitude, revolutions, and infinite number of the heavenly bodies; nor could the pilot receive direction, in his course, from the polar star, if day-light were perpetual.

Considered in another sense, the night appears peculiarly beneficial in diminishing or terminating those wants which in the day-time cost us much anxious solicitude. How expensive are those comforts and conveniences without which we should scarcely think ourselves blest with existence! How many families, oppressed by indigence, begin the day with anxiety, and end it in laborious toil! but at the return of night, their

cares and miseries are suspended: to be happy, they have only to retire to bed, and when sleep weighs down their eye-lids their wants are satisfied. Night equalizes all conditions: the monarch reposing beneath yon purple canopy, and the mendicant stretched on his bed of straw, alike enjoy a blessing which money cannot purchase.

O! how gracious is that Being who has combined all things for the happiness of his creatures! The major part of *evils*, so called, are only such to those who suffer themselves to be blinded by prejudice or passion; and, on impartial investigation, they appear to be real blessings to mankind.

We may be assured that many millions of our fellow-creatures who have spent the day in unprofitable or fatiguing labour; that others who have groaned under the yoke of the oppressor of humanity; and that a number of travellers, both by land and sea, will bless God at the approach of the season which brings with it the comforts of repose. We shall also bless him at the commencement of every night, if, having the wisdom to employ the day well, we acquire a right to expect refreshing sleep. In proportion to the shortness of the present days we should appreciate their value, and employ them to advantage. The night approaches in which it will no longer be in our power to work or act. But even that will be to us a blessing, if we enjoy beyond the grave that peace and rest, which are reserved for every sincere Christian.

JANUARY XV.

Reflections on Myself.

It is equally reasonable and necessary that we should sometimes withdraw our attention from foreign objects, and fix it upon ourselves. For my own part, I am aware, it has too frequently happened, that, while musing on the things around me, I have lost sight of myself; or, at least, I have been too unmindful of that gratitude and veneration which a contemplation of the starry heavens, and the numerous blessings of the earth, should naturally produce. I will now reflect on what most intimately concerns my structure, and convince myself, more and more, that, as a man, I am not less

the master-piece of divine power and wisdom, than those prodigious bodies, whose magnitude astonishes the imagination. How admirable is the union of my body and soul, and how incomprehensible their reciprocal action! I daily experience, that, when the rays of light reflected from exterior objects strike my eyes, my soul receives the idea of the size, the form, and colour of those objects. I feel, that, when a certain undulating motion is made in the air, my soul receives the idea of sound. By this means I have the perception of a thousand changes which happen around me, and even of the thoughts of other men. I experience, every moment, that, as soon as my soul wishes it, my body transports itself from one place to another; that it exercises its power over my arms, my hands, and my feet: in a word, all my limbs are disposed to obey every impulse of my will. These are incontestable facts; and yet I cannot explain the manner in which they are effected. In this mutual influence of body and soul, there is a wise and wonderful art, which I cannot fathom; and the whole result of my inquiries into it, is surprise and admiration.

If I consider my body separately, I find it also a master-piece of the creative hand. Here, nothing is superfluous, nothing is wanting: each limb is placed in the manner best adapted for ornament and utility. Could I wish for a member more than those which compose a perfect body? And suppose, on the other hand, that even one only were wanting, or transposed—so that the eyes, for example, were set in the feet or placed where the ears are—what inconvenience, what deformity would it occasion! The divine wisdom therefore appears in the disposition of the external parts of my body; but the arrangement of its interior parts is still more admirable. My body was designed to serve more than one purpose, and to fulfil a variety of functions. It was first to be the medium through which the soul was to be informed, in different ways, of the presence of objects not within itself. The organs of sight, of smell, of hearing, of taste, and of feeling, answer this end; and each of them is a miracle of divine power and wisdom. But, in order that the body should transmit to the soul different sensations of exterior objects, it was necessary it should be moveable; and, for this purpose,

how many of its parts concur! The bones, the joints, the sinews, the muscles, or fleshy parts, susceptible of extension or contraction, give me the power of moving in a thousand ways. In the mean time, as a machine so wonderful as my body, must suffer continual waste, by its motions and functions, it was necessary, for its preservation, that its losses should be repaired; therefore, other parts, besides those already mentioned, were necessary—some to receive aliment, others to comminute it, to separate its nutritious juices, and to circulate them through the whole body with such regularity, that every member may receive its proper share in the general distribution. All these parts are really found within myself, and perfectly accomplish the respective purposes for which they were designed.

I bless thee, O Lord, for having made me so wonderfully; and my soul acknowledges with pleasure, that *all* thy works are worthy of admiration.

JANUARY XVI.

The ill Effects of extraordinary Cold.

Why are we so ready to remark, to dwell upon, and murmur at, those effects of nature which sometimes appear injurious, whilst we slightly pass over the numerous striking advantages which they procure for us? In this respect, men act towards God as they generally do towards each other. A slight offence, the least injury from their best friend or benefactor, often effaces the remembrance of the essential services they have formerly received. Their ingratitude and pride lessen the value of the latter, and make them consider the former as the greatest wrong. At this season of the year the remark seems peculiarly appropriate. Men are attentive only to the evil which the cold may occasion, without considering the good it may do to the earth; or, at least, without thinking of it with gratitude. If they discover the least damage, if any part of the great whole be in a suffering state, they think themselves authorised to murmer against God, without considering, that nature, taken as a whole, derives great advantage from the cold. Let us now weigh, without partiality, the advantages and the evils which may be attributed to it, and the result of our inquiry will con-

vince us how little reason we have to arraign the government of a wise and gracious Providence.

It is true, that severe cold has its inconveniences and troublesome consequences. Sometimes the water freezes to such a depth that the springs become useless; the fish expire in the ponds; rivers, containing vast shoals of floating ice, swell above their banks, and inundate the adjacent country; the stoppage of water-mills produces a scarcity of bread; and fuel either totally fails, or becomes extremely dear. Vegetables suffer in a variety of ways: the winter seeds freeze; and plants and shrubs, unless carefully covered, inevitably die. Several animals become the victims of cold and hunger; and even the health and life of man are exposed to serious danger. These are some of the most striking evils which the severity of the season can occasion. But how many winters do we pass without them! And though even some animals should die, and some plants perish with the cold, what is this in comparison with the advantages we draw from it? Let us be more circumspect in the judgment we form of the ways of God. Imperfectly as we are acquainted with the connexion between the things of this world, and unable as we are to comprehend, in its full extent, the chain of causes and effects; how can we presume to decide upon what is truly advantageous or hurtful in nature? And would it not be equally unjust and unreasonable, that a partial evil should lead us to blame the whole? Let us rather confess our ignorance, and strengthen ourselves in the comfortable persuasion, that there is much more good than evil in the world, with more cause for content than subjects of affliction. And let us rest assured that many things which self-interest makes us consider as hurtful, contribute to the general good. Reasoning in this manner, we shall enjoy tranquillity in the midst of all events; and, whatever be our fate, we shall never cease to adore our wise and beneficent Creator.

JANUARY XVII.

The Repose of Nature during Winter.

THE winter days are days of rest to nature. In the preceding months she employed herself in fulfilling the designs of the Almighty, by laboring in the service of

his creatures. How rich was the spring in blossoms! how many seeds it opened! and what abundance of fruit the summer ripened for us to gather in autumn! Each month, each day, we receive some presents from the bounteous hand of nature. Is there a single instance in which she has not pleased our sight, delighted our smell, or indulged our taste? and has she not often satisfied them all at the same time? Like a careful and affectionate mother, she employed herself from the morning to the evening of the year, in procuring for her favorites, the necessaries, conveniences, and comforts of life. Clothing, food, amusement—all have been drawn from her maternal bosom. For us she has caused the grass to grow; and loaded the trees with blossoms, leaves, and fruit. For us the golden grain has covered the fields; the vine has produced its invigorating fruit, and the whole creation has exhibited a thousand charms. Exhausted by so many labors, nature now reposes: but it is only to collect new strength for subsequent exertions: and the very rest she now enjoys, is, in fact, a secret activity, which silently prepares a new creation. Already, the necessary dispositions are making, that the deserted earth may recover, at the end of a few months, the children she has lost. The corn, destined for our nourishment, already begins to bud; and the plants intended to adorn our fields and gardens, insensibly expand their numerous fibres.

Here, O beneficent Creator, I adore thy power and wisdom! The repose which nature takes, is not less interesting to us, nor less worthy of entering into the plan of thy wise providence, than the activity she displays in spring and summer. Thou hast combined the several revolutions of the earth: thou hast formed the most intimate connexion between them, and equally divided the seasons of rest and labour. It has been thy will that each sun should vary the scenes of nature, in the time and manner most proper for the perfection of the whole. If I have been so senseless as to blame any thing in the government of this world, pardon, O God, my temerity. I discover, and am more and more persuaded, that all the plans of thy providence, however extraordinary they may appear to my weak reason, are replete with wisdom and goodness. Now that I behold the earth covered with a mantle of snow, I wish to re-

flect on the benefits that will result from it: for I am well convinced, that without such seasons, the landscape could no more be embellished with fruits and flowers, nor would the cheerful song of harvest be again heard in our land. It is thou, O Lord, who, in granting repose to the earth, enrichest men with a thousand blessings.

To myself also, O God, there will shortly come a period of rest from all my troubles, cares, and afflictions. Thou hast wisely ordained that the spring and summer of my life should be devoted to activity, and to the service of my fellow-creatures. O! that on the approach of my autumnal season, I may resemble one of those fertile trees which pour into our laps an abundance of fruit; and in my wintry days, when my head is whitened by the snows of time, may it be said of me, "Behold that venerable man, who has devoted his youth to the benefit of mankind; whose faculties have been constantly exercised in active, social virtues; and who is now hastening to the eternal mansions of pure felicity."

The repose that I promise to myself here below, is little else than a preparation for new troubles; but that which awaits me beyond the grave, and in the bosom of eternity, shall be sweet and uninterrupted; and the very remembrance of the sorrows and afflictions I suffered here, will fill my heart with inexpressible joy. In the firm hope of that repose which is reserved for me, may I apply myself zealously to fulfil the duties to which I am called, and devote my powers to the glory of God, and to the good of my fellow-creatures!

JANUARY XVIII.

The Laplanders.

I ENTER upon this day's meditation with a lively sense of gratitude towards my Creator, and of pity to those of my fellow-creatures to whom nature seems to have distributed her blessings with a sparing hand. I shall, at present, fix my attention on the Laplanders, and those who dwell in the vicinity of the arctic circle; a race of mortals whose lot, compared with ours, seems to be illumed with very few rays of happiness.

Their country is formed of a chain of mountains, occasionally intersected by vast bogs and marshes, and

perpetually covered with snow and ice; which are also widely diffused over the smaller hills and valleys. The rigors of winter are felt during the greatest part of the year; the nights are tediously long, and even the day-light is dim and feeble. At this season the inhabitants seek shelter from the cold in their rude and simple tents or huts, which have neither door nor chimney: the fire-place, surrounded by stones, is placed in the centre, and the smoke escapes by an aperture which serves instead of a window. From this place they suspend, by iron chains, the caldrons which serve to cook their victuals, and to melt the ice which serves them for drink. The interior of the hut is lined with furs, to exclude the sharp air; and a few skins of animals spread upon the ground suffice instead of a bed. Confined to these wretched habitations, and enveloped by perpetual darkness, during six months of the year, the natives hear no other sounds than the loud whistling of the wind, and the cry of the wolves, which run howling about in all directions in quest of prey.

How could we endure so severe a climate and such a wretched mode of life! How much should we think ourselves to be pitied, if we had nothing before our eyes but an immense extent of ice, and whole deserts covered with snow; while the absence of the sun rendered the cold still more insupportable; and if, instead of a convenient dwelling, we had only huts, or moveable tents made of skins; and no other resource for our subsistence, but that of long and dangerous hunting; how hard should we deem our lot, thus deprived of all the pleasures procured by the arts, and of all the blessings of social and commercial life!

Are not these reflections calculated to make us observant of those numerous advantages of our own climate, so little attended to? Ought they not to animate us to bless Divine Providence, for delivering us from such distresses and inconveniences, and for distinguishing us by a thousand benefits? Yes, let us ever bless that wise Providence: and when we feel the severity of the season, let us be thankful that the cold is so moderate where we dwell, and that we have such numerous ways of guarding against it. Let us also bless the Almighty Ruler of the universe, for granting us, in the midst of the desolate images which winter presents, the

delightful prospect of returning spring, the mere idea of which tends to support and comfort us under the present evil.

But is the inhabitant of the northern countries so unhappy as we imagine? It is true, that he wanders painfully through rough valleys and unbeaten roads, and that he is exposed to all the inclemency of the seasons; but his hardy body is able to bear fatigue. The Laplander, though poor, and deprived of all the conveniences of life, is happy in knowing no other wants than those which he can easily satisfy. He is deprived for several months of the light of the sun; but, to make the darkness of night supportable, the moon, and the aurora borealis, are appointed to light his horizon. Even the snow and ice in which he is buried do not render him miserable; education and habit having completely armed him against the severity of his climate. His hardy mode of life has taught him to brave the cold, and nature has rendered easy of access those particular helps which are indispensibly needful. She kindly points out to him the animals whose fur defends him from the sharpness of the air; and in his rein-deer he possesses the most valuable riches:—this useful quadruped furnishes him at once with his tent, clothing, bed, food, and most nutritious beverage; it enables him to perform the longest journeys with ease and expedition; and, in a word, supplies almost all his wants, while its maintenance is neither attended with expense nor trouble. If, in the midst of all the misery of their condition, these poor mortals had a more perfect knowledge of God—a knowledge such as revelation has given us; if, less savage and insensible, they could draw from friendship those sweets which improve life; if it were possible, I say, to unite these precious advantages with the tranquillity of mind which forms their character, these supposed unhappy people, whose mode of life frightens our depraved imaginations, would not be so pitiable as we commonly suppose. And if it be true, that the idea we form of happiness depends more on opinion than on reason; if it be true, also, that real happiness is not confined to certain people or particular climates; and that, with the mere necessaries of life and peace of mind, man may be happy in any corner of the earth; we have an undoubted right to inquire, What does the Laplander want to make him happy?

JANUARY XIX.

The wise Ordinance of our Globe.

However limited the human mind may be; however incapable of investigating or even conceiving the entire plan which the Creator executed in forming our globe; we may, notwithstanding, by the use of our senses and the faculties with which we are endowed, discover sufficient to excite our acknowledgement and admiration of the Divine wisdom. To convince ourselves of this, we need only reflect on the form of the earth. It is well known to resemble a ball; and this form was evidently chosen to the end that its entire surface should be occupied by living creatures. This purpose could not have been accomplished, if the inhabitants of every part had not found sufficient light and heat; if the water could not have diffused itself every where; or if the wind could not have blown, without any material obstacle, in all directions. The figure which infinite wisdom has given it, is admirably adapted to prevent these inconveniences, and to admit, in a certain degree, to every point of its surface, the advantages necessary to existence. Without this form, the revolutions of day and night; the changes in the temperature of the air; cold and heat, moisture and dryness; could not have taken place. If the earth had been square, conical, hexagonal, or in any other angular form, what would have been the consequence? The greatest part must have been completely inundated, while the other languished in perpetual drought: some countries would have been deprived of the wholesome circulation of wind, whilst others would have been torn to pieces with continual storms.

When I reflect on the enormous mass which composes our globe, I have new reason to admire the Supreme wisdom. If the earth were softer or more spongy than it is, men and animals would sink into it: if it were harder, more compact, and less penetrable, it would resist the toil of the labourer, and would be incapable of producing and nourishing that multitude of plants, herbs, roots, and flowers, which now spring out of its fertile bosom. Our globe is formed of regular and distinct strata; some of different stones, others of several me-

tals and minerals. The numerous advantages which result from this arrangement, particularly in favor of mankind, are sufficiently obvious. Whence should we obtain sweet and salubrious water, so necessary to life, if it were not purified and filtrated through the beds of sand which lie at a considerable depth in the earth? The surface of the globe, pleasingly variegated with hills and valleys, plains and mountains, also denotes the wisdom of the great Architect, while we contemplate its irregularities as productive of general beauty, conducive to the health of its numerous inhabitants, and peculiarly adapted to the nurture of the numerous tribes which form the vegetable kingdom. Had there been no mountains, the earth would have been more thinly inhabited by men and animals; we should have had fewer trees, plants, and simples; metals and minerals would have been totally unknown; the vapours could not have been condensed, and we should have had neither fountains nor rivers.

Who can help acknowledging, that the whole plan of the earth, its form, its external and internal construction, are regulated according to the wisest laws, and combine to promote the comfort and felicity of living creatures?

Supreme Author of nature! thou hast ordered every thing on earth with wisdom? Wherever I turn my eyes, whether I examine the surface, or penetrate the interior structure of the globe thou hast appointed me to inhabit, I every where discover marks of profound wisdom and infinite goodness.

JANUARY XX.

Short Meditations on the Works of God, drawn from the Holy Scriptures.

"HEARKEN unto this, stand still, and consider the wondrous works of God *."—"He hath established the world by his wisdom, and hath stretched out the heavens by his discretion, for he is the former of all things †."

"God said, Let there be light, and there was light. And God saw the light that it was good: and God di-

* Job, xxxvii. 14. † Jer. x. 12, 16.

vided the light from the darkness; and God called the light day, and the darkness he called night*."—"Thou, even thou, art Lord alone: thou hast made heaven, the heaven of heavens, with all their host: the earth, and all things that are therein; the sea, and all that is therein; and thou preservest them all: and the host of heaven worshippeth thee†."—"O Lord my God, thou art become very great: thou art clothed with honour and majesty: who coverest thyself with light as with a garment, and spreadest out the heavens like a curtain: who layeth the beams of his chambers in the waters: who maketh the clouds his chariot: who walketh on the wings of the wind. Who maketh his angels spirits, his ministers a flaming fire. Who laid the foundations of the earth, that it should not be removed for ever. Thou coveredst it with the deep, as with a garment: the waters stood above the mountains ‡."—"He stretched out the north over the empty space, and suspended the earth upon nothing. He bindeth up the waters in his thick cloud, and the cloud is not rent under them. He divideth the sea with his power; and, by his understanding, he smiteth through the proud §."—"For he maketh small the drops of water: they pour down rain according to the vapour thereof; which the clouds drop, and distil upon man abundantly. Also, can any understand the spreadings of the clouds, or the noise of his tabernacle? Behold he spreadeth his light upon it, and covereth the bottom of the sea ‖."—"It is from thence, as from a throne, that he sometimes judgeth the people, and sometimes scattereth abundance on the earth."—"God thundereth marvellously with his voice; great things doth he, which we cannot comprehend. For he saith to the snow; be thou on the earth; likewise to the small rain, and to the great rain of his strength. Out of the south cometh the whirlwind, and cold out of the north. By the breath of God frost is given; and the breadth of the waters is straitened.—Also, by watering, he wearieth the thick cloud: he scattereth his bright cloud; and it is turned round about by his counsels, that they may do whatsoever he commandeth them upon the face of the earth. He

* Gen. i. 3, 4, 5.
† Neh. ix. 6.
‡ Psal. civ. 1—7.
§ Job, xxvi. 7, 8, 12.
‖ Job, xxxvi. 27, &c.

causeth it to come, whether for correction, or an effect of his favour and mercy towards man *."—God is wise in heart, and mighty in strength: who hath hardened himself against him, and hath prospered? Who removeth the mountains, and they know not: who overturneth them in his anger: who shaketh the earth out of her place, and the pillars thereof tremble? who commandeth the sun, and it riseth not; and sealeth up the stars: who alone spreadeth out the heavens, and treadeth upon the waves of the sea: who maketh Arcturus, Orion, and the Pleiades, and the chambers of the south: who doth great things past finding out; yea, and wonders without number †."—" Thou didst cleave the fountain and the flood: thou driedst up mighty rivers. The day is thine; the night also is thine: thou hast prepared the light and the sun; thou hast set all the borders of the earth; thou hast made summer and winter ‡."—" He caused an east wind to blow in the heaven; and, by his power, he brought in the south wind §."—" He watereth the hills from his chambers. The earth is satisfied with the fruit of his works. He causeth the grass to grow for the cattle, and herb for the service of man, that he may bring forth fruit out of the earth ‖."—" He giveth to the beast his food, and to the young ravens which cry ¶."—" The eyes of all wait upon thee, and thou givest them their meat in due season **."—Thus saith the Lord thy Redeemer, and he that formed thee from the womb, I am the Lord that maketh all things, that stretcheth forth the heavens alone, that spreadeth abroad the earth by myself ††."—" For thus saith the Lord that created the heavens, God himself that formed the earth and made it: he hath established it, he created it not in vain, he formed it to be inhabited: I am the Lord, and there is none else ‡‡."—" Remember the former things of old; for I am God, and there is none else; I am God, and there is none like me §§."—" I form the light, and create darkness; I the Lord do all these things ‖‖."

* Job, xxxvii. 5, &c.
‡ Psal. lxxiv. 15, &c.
‖ Psal. civ. 13, 14.
** Psal. cxlv. 15.
‡‡ Isaiah, xlv. 18.
‖‖ Isaiah, xlv. 7.
† Job, ix. 4, &c.
§ Psal. lxxviii. 26.
¶ Psal. cxlvii. 9.
†† Isaiah, xliv. 24.
§§ Isaiah, xlvi. 9.

JANUARY XXI.

Wonders of the Human Voice.

The human voice is one of the greatest master-pieces of Divine workmanship. Whether we consider its principle, its variations, or its organs, it is impossible to fathom its admirable mechanism. Let us now try to reflect upon it in silence. What is it that enables us to utter sounds? That faculty depends on the construction of the windpipe. The little opening which is in it occasions a sound, when the air we have breathed is expelled with quickness. The windpipe is composed of circular cartilages, which are held together by an elastic membrane. At its entrance there is a small valve, which gives passage to the air when it goes out from that passage. It opens more or less to modify and multiply the tones of the voice; and when we swallow any thing, it closes, in order to keep out the food, which must pass over it in its way to the stomach. Experience has taught us, that the extent of the human voice comprises twelve full tones. To produce this variety, then, it was necessary that the windpipe should be divided into twelve equal parts: and, as its two sides, when stretched, are distant from each other the tenth part of an inch, we may calculate from thence, that each tone of the voice may be subdivided into a hundred others; and that a man is able to produce 2400 different tones, which may all be distinguished by the ear. However, in regard to these properties, though so surprising, we have but few advantages over the animals. But the prerogative of man consists in this, that he can compress the air, and modify the voice, so as to pronounce letters and words; the palate, the teeth, and lips, contribute essentially to this operation.

Let us reflect on the method of pronouncing the five vowels, each of which has only a simple sound. When we pronounce the letter *a*, the sound is quite different from that of *e*, *i*, *o*, *u;* though each be pronounced with the same tone. The reason of this difference is among the number of the impenetrable mysteries of nature. To pronounce the five vowels, the lips must be more or less opened; and, for this purpose, the human mouth is formed differently from that of any animal. Even

those birds who learn to imitate the human voice, can never distinctly pronounce the vowels; and this is what makes their imitation so imperfect. As to the pronunciation of consonants, three of our organs contribute to it particularly—the lips, the tongue, and the palate. The nose also has its share: try to stop it, and certain letters cannot be pronounced but in an imperfect manner. One thing which proves the wonderful nature of that organization which renders us capable of pronouncing words, is, that human ingenuity has never been able to imitate it by any machine. Singing, indeed, has been tolerably well imitated, but not the articulation of sounds, nor the pronunciation of different vowels. Organ-builders have invented a stop which they call the *vox humana*, or human voice, but it produces no tones except such as resemble the diphthongs *ai* or *ae;* and all the efforts of art cannot arrive at imitating one of those words which we pronounce with such facility.

Let these considerations induce us again to meditate upon, and to celebrate, the ineffable wisdom and goodness which God displays in the formation of each part of our bodies! And may these reflections make us sensible of the value of the gift of speech, which so advantageously distinguishes us from the brute creation. How melancholy would society be, and how much would our happiness be diminished, if we had not the faculty of communicating our thoughts by conversation, and of pouring out our hearts into the bosom of a friend! Let us therefore duly appreciate the value of this precious gift, and employ it in the most reasonable manner, to glorify the Supreme Being, and to edify, comfort, and instruct our fellow-mortals.

JANUARY XXII.

The Duty of Reflection in Winter.

Those persons who are solicitous to derive mental improvement from every occurrence, will gladly be reminded of the obligation they are under of employing even their winter days so as to become consolatory seasons to their souls. It is easy to demonstrate, how agreeable, as well as advantageous, this duty may be rendered. How would our piety increase in fervor and

sincerity, if each change, each new appearance, of nature did but raise our thoughts to that Being whose glory is as manifestly discovered in winter as in any other season! When we behold the earth covered with snow, the rivers loaded with ice, the trees stripped of their foliage, and all nature barren and desolate, let us reflect on the views of the Creator; and a very moderate share of attention will convince us, that every thing is planned with wisdom, and that all the laws of Providence combine for the general good. If, from the weakness and limits of our understanding, we can only take in the smallest part of God's designs, it is enough for us to know, that the ice, the snow, and all the phenomena of winter, serve, in the plan of Supreme Wisdom, to render the earth fruitful, and to prepare blessings for its inhabitants. How many objects are calculated to excite appropriate and edifying reflections! When we observe the snow melt, the ice dissolve, and day after day glide on with astonishing rapidity, we should call to mind the frailty of our sublunary existence.—While inhabiting a warm apartment, and solacing ourselves with all the comforts of life, we should think of those unhappy mortals who are destitute of fuel, bread, and clothing. The short interval between day and night, emblematic of the span allowed to mortals, should impress our minds with the indispensable necessity of redeeming our time, and converting every hour to some beneficial purpose. And when we witness the imprudence of those persons who heedlessly expose themselves upon the ice, we should learn to pity and avoid the thoughtlessness and levity of those who abandon themselves entirely to the pleasures of the world.—These, and many similar objects, at this season, may furnish ample subjects for meditation, and may serve at once to employ our minds, to ameliorate our hearts, and to fill our souls with the most pleasing images and pious resolutions. "Let us imitate the bee—follow our inclination, and choose the finest flowers: to a well-disposed mind, the most barren field is rich in sweets." Such an occupation of our time will be productive of the greatest advantages, as it will enable us to restrain the wanderings of our hearts, and to conquer their sensuality. The martyrdom of mental weariness may be banished without recourse to turbulent pleasures: for

while others seek amusement in the dissipations of the world, we shall find much nobler and more permanent enjoyments in contemplating the works of God, either in solitude or in a chosen society of virtuous friends; for nothing can inspire a sweeter, purer satisfaction, than the raising one's heart above terrestrial objects, and partaking of that which employs the angels and the elect in heaven What rapture, to find God every where! to discover in the flake of snow, as well as in the expanding blossom—in the rigors of winter, as well as in the heat of summer—the goodness and wisdom of the Almighty Creator! And this rapture, far surpassing all the pleasures of the world, is the result of habitual moral reflection.

JANUARY XXIII.

The Fear of Spectres.

The long winter nights are terrific to a number of people, because they are tormented with a ridiculous apprehension of spectres. In the days of our ancestors this superstitious dread was more excusable; as the nature of spirits was then less clearly understood, and the most idle legendary tales received the awful sanction of religion. But there is reason to be surprised, that, in an age so enlightened as ours, such ideas and such fears should possibly exist. Man, however, seems peculiarly ingenious to raise imaginary monsters, and to inflict torments upon himself. As if the *real* ills which occasionally assail him were not sufficient, he creates *imaginary* ones, and becomes unhappy because he believes himself to be so. How is the miser tormented by his fear of robbers; the misanthrope, by his distrust of all who surround him; and the discontented man by his anxious solicitude respecting his future destiny!—Hence we may learn the nature of the human heart, and the absolute necessity of watching over our imagination. If it deceive us in the night, by exhibiting frightful phantoms, it often, in the day time, produces illusions, by representing vice under the most attractive forms. Let us be as ready to avoid all temptations to evil, as we are to fly from the apparition of a spectre. But, in the former instance, man is bold and rash: and, in the latter, timid and fearful. Whence comes it,

that this chimerical fear takes such a strong possession of some persons, who are not in the least affected by much more alarming circumstances? The apprehension of beholding a single spirit causes us to shudder, whilst the certainty of being one day transported into a world of incorporeal beings, makes no impression on our minds. Nay, though we know that every step draws us nearer the presence of the eternal and infinite Spirit, we feel no apprehensions about it. If in the solemn gloom of midnight a departed friend were to appear before us, and declare that we should shortly join him; the most intrepid man would be overpowered with terror; he would seriously reflect on the event, and would wait the issue with great anxiety. Why then are we so inattentive to that divine voice which cries aloud,—"Prepare, O Israel, to meet thy God!" How inconsistent, to rest in security, when it would be prudent to fear; and to tremble, when there is nothing to dread!

Let us not abandon ourselves to causeless and unnecessary alarms: but rather learn to fear that Almighty Being, at whose coming the bravest sinner shall stand appalled, and shall call upon the hills to hide, and the mountains to cover him. Let us dread the anger of our Creator, and we may safely banish every other fear, and exclaim with David, "The Lord is my light, whom shall I fear? The Lord is the strength of my heart, of whom shall I be afraid?"

JANUARY XXIV.

Subterraneous Fires.

By digging a little downward into the earth, a greater degree of cold is felt than on the surface; because the latter is heated by the sun. Hence it is, that the inhabitants of hot countries can preserve ice, to cool their drink, the whole year. But if we dig fifty or sixty feet lower, the heat increases sensibly; and at a greater depth, it becomes so close, as to stop respiration, and extinguish a candle. The cause of this heat cannot be easily ascertained. Those who assert that it results from subterraneous fires, seem to come nearest the truth: but how a fire so closely shut up can burn, what fuel can support it, and how it can be prevented from

consuming every thing about it, are questions which cannot be easily resolved.

There are various phenomena on our globe, however, that may be adduced in support of the doctrine; particularly those eruptions of inflammable matter which have rendered the mountains of Etna in Sicily, and Vesuvius in the kingdom of Naples, peculiarly famous. The accounts given of these volcanoes are truly frightful. Sometimes a black vapour only rises out of them; at other times a hollow roaring is heard, followed by thunder, lightning, and a partial earthquake: then the vapour clears up, and becomes luminous; stones fly out with violence, and fall again into the gulf whence they were ejected. Sometimes these eruptions are so violent, that large pieces of rock are hurled into the air, and turn round with the velocity of a foot-ball. The force of the interior air of these mountains is so prodigious, that, in the last century, pieces of rock, weighing three hundred pounds, were thrown up into the air, and fell at the distance of three miles. Even these eruptions, however, are not the worst; for, at certain times, the vitrified entrails of the earth boil up, and rise till their formidable foaming runs over at the outside, and flows for the space of several miles through the neighbouring fields, overwhelming every thing in its passage. This torrent of liquid fire lasts for several days: one wave rolling over another, till it reaches the sea: and even here, its violence is such, that it continues to flow for some time without being extinguished in the waters of the ocean. Who can reflect without terror upon the disasters which such eruptions occasion! Farms and villages, with their fertile plantations, are completely swallowed up; the meadows are consumed; the corn, olive trees, and vines, entirely destroyed. In one eruption of Etna, the torrent of burning lava spread itself over fourteen cities, and the roaring within the mountain was heard at twenty miles' distance.

But wherefore these volcanoes, which spread such terror and devastation on the earth? Why has the Lord created them? Why, instead of putting bounds to their fury, has he permitted them thus to distress his creatures? Alas! what am *I* who presume to ask such questions? or what right have I to arraign the plans of

infinite wisdom? I am well convinced these formidable objects resulted not from chance, and I ought to conclude that the Creator designed them for some wise purpose. Besides, even here I recognize the beneficent hand which provides for the welf re of mankind. Whatever mischiefs the eruptions of these mountains may occasion, they are nothing in comparison of the advantages they procure to our globe. The bosom of the earth being full of fire, it was absolutely necessary that there should be volcanoes, because they are the vents by which the force of this dreadful element is broken and weakened. And though the countries where subterraneous fires collect in the greatest quantities, are subject to earthquakes, the shocks would be still more violent, if these volcanoes did not exist.—Italy would not exhibit such fertile landscapes, if the fire, which has its store-house in the bosom of the earth, did not occasionally issue from these volcanoes. And, after all, who knows if these frightful phenomena may not produce several other advantages concealed from us, and if their influence may not extend over the whole globe? At least, this is enough to convince us that they contribute to fulfil the designs of our Divine Author, so full of wisdom and goodness. And if there still remain things to us obscure and impenetrable, let us put our hands upon our mouths, and say, "Lord, thy judgments are right and equitable, and thy ways impossible to discover: who would not fear thee, O God of heaven, who dost such terrible things!"

JANUARY XXV.

On Comets.

THE extraordinary star which borrows its name from its surrounding vapour, is undoubtedly one of the celestial bodies that belong to the system of our world. It moves round the sun, as well as the other planets; but it differs from all of them, by the peculiarity of its motion, its orbit, and its figure. Seen through a telescope, it appears full of spots, and inequalities; but the mist which surrounds it often precludes us from discovering its real form. The size of comets is various; some are scarce equal to stars of the third and fourth class, others, on the contrary, are larger than those of the first

magnitude. In the middle of the comet there appears a very thick nucleus, which sometimes separates, and becomes like the edge of the disk. Its form is not always perfectly round; nor is its light always equally strong and brilliant. Its tail, always opposite to the sun, is of so thin and transparent a substance, that the fixed stars may be seen through it; and as it extends sometimes from the horizon almost to the zenith, the whole body exhibits a very awful appearance. The farther the tail is from the comet, the more it enlarges; and its light decreases in proportion to the augmentation of its size. Sometimes it separates into several divisions of rays. This is part of the result of some exact observations made by astronomers; but, undoubtedly, it is the least important of what should be known, in order to have a perfect knowledge of all that relates to those celestial bodies, many of which are placed beyond the reach of our sight.

Is the comet an aqueous planet, or a burning globe? Is that globe inhabited, which, sometimes near the sun, endures all its burning heat, and, at other times, going out of the line of the spheres, plunges into total darkness, where it seems as if the solar rays could never penetrate? Or, has the Judge of the universe designed it for the punishment of his creatures? Is its coarse surface exposed by turns to the most violent extremes of heat and cold, the abode of perverse and reprobate beings? Shall these wandering bodies one day serve to divert the course of the planets; and, by that means, become the cause of their destruction? Or, are they deserts, void and shapeless, as the earth was before the Creator made it habitable and fertile? And will not the fate of comets be determined till our globe shall be no more?

The impossibility of resolving these questions, ought to convince us, that human knowledge is very limited. Men, however, too often lose sight of this truth: for, if it were present to their minds, the appearance of a comet would not excite a thousand vain conjectures, so ill according with our confined understanding. Many consider a comet as the forerunner of divine judgments, and pretend to read in its awful aspect the destiny of nations and the fall of empires; while others consider it as an infallible presage of war, pestilence, inundation,

or some other dreadful calamity. These superstitious people do not consider, that a comet is a very natural appearance, the return of which can be exactly calculated; and, consequently, cannot, in any respect, interrupt the ordinary course of things. They do not consider, that this body, as well as the planets, must have a design of very different importance from that which superstition gives it. What! would the Supreme Wisdom have placed those prodigious bodies in the sky, merely to announce to a small number of living creatures the fate that awaits them?

May the comet, after traversing the immense space which now separates it from my sight, be to me, on its return, not a messenger of misfortune, but the herald of that adorable Being who prescribes to it its course; who conducts it through the ethereal space; and orders it sometimes to approach the sun, and sometimes to remove to the farthest limits of the planetary system.

JANUARY XXVI.

Snow.

On reading the title of this meditation, some persons may inquire if it be worth while to examine so common a phenomena of nature. It is my design, however, to draw their attention to this wonder, and to show that the formation of snow has sufficient charms to occupy and to interest a reflecting mind.

Snow consists of aqueous particles frozen in the air, and only differs from ice in this, that the water which constitutes ice has been frozen in its ordinary state of density, and the congelation of snow has taken place when its particles were separated and reduced to vapour. Repeated experiments have demonstrated, that snow is about twenty-four times lighter than water, and that it occupies ten or twelve times more space, at the instant of falling, than the water produced from it when melted; which could not be the case, if the snow were not a water extremely rar fied. But snow is not mere water; for the construction of its particles, and the effects it produces, are different from those of water and ice: and in this respect, the manner in which it is formed is peculiarly remarkable.

When particles of vapour, collected together, freeze

in the atmosphere, the nitre dispersed in the air unites itself with them in the form of a small hexagonal dart. While a great number of such little darts meet together, the particles of water which are amongst them become hard, and assume the form of the nitre. This accounts for those six-sided flakes, composed of points like small needles, to each side of which are attached smaller threads or filaments; but the form of these is frequently changed by being driven in various directions by the wind.

How wonderful would these flakes of snow appear, if we were not annually accustomed to behold them. But should the frequent reproduction of curious objects render us inattentive to them? Certainly not: but, on the contrary, we should be the more careful to examine them, and to admire the power of that God, who, in every season, shows himself so rich and inexhaustible, in means to provide for the conveniences and pleasures of his creatures. Have we any reason to complain that winter does not supply a variety of amusements for the senses and the understanding? Is it not an astonishing spectacle, to see that nature has formed even the flakes of snow with the most exact symmetry? to see such prodigious numbers of them fall from the sky? and to observe the different forms which water is capable of assuming under the creating hand of God? Sometimes it forms itself into hail: sometimes hardens into ice; and sometimes changes into innumerable flakes of snow. All these changes serve at the same time to improve and embellish the earth; and, even in the smallest phenomena of nature, God shows himself great, and worthy of our incessant adoration. Convinced of these truths, let us no longer regard the snow with indifference or inattention; but each time we behold it descending from the heavens, let us sincerely reflect on that divine and benevolent Being, who scattereth his snow like wool, and his hoar-frost like ashes; who commandeth the cold to bless and fertilize the earth, and who is worthy to receive all praise, honour, and glory, for ever and ever.

JANUARY XXVII.

The Rapidity with which Human Life passes away.

Our life is short and transitory. This is an incontest-

able proposition; though, to judge from the conduct of most people, one would not suppose it a received truth. Let us judge by our own experience. Ought not each step we have taken, from our births to the present moment, to have convinced us of the frailty of life? Let us consider only with what swiftness the days, weeks, months, and years, have passed, or rather flown away. They disappeared before we were conscious of their lapse. Let us endeavour to recall them to our recollection. It is impossible to enumerate their different epochs; and if some very remarkable moments had not made a deep impression on our minds, we could not have related their history. How many were the years of our infancy, of which we can say nothing, but that they have glided away! How many others have passed in the thoughtlessness of youth; during which, misled by inclination, and devoted to pleasure, we had neither the wish, nor the time, to look into ourselves! In succeeding years, being of riper age, and more capable of reflection, we deemed it expedient to change our course of life, and to act like reasonable beings; but the concerns of the world occupied our attention to such a degree, that meditation and amendment were still neglected; and the increase of our families naturally augmented our solicitude and our efforts for their support. Insensibly the time draws nigh in which we shall arrive at old age; and, perhaps, even then, we shall neither have leisure, nor power, to recollect the past, nor to improve the period to which we are arrived; to muse upon what we have done, or neglected to do; in a word, to consider seriously the important end for which our Creator placed us in the world. In the mean time, what can ensure our ever attaining that advanced age? A thousand accidents may break the brittle thread of life, before it comes to its full length. Hence the infant who has but just opened his eyes on the creation closes them in death, and is reduced to dust; and the young man, who gave the most promising hopes, is cut off in the bloom of strength and beauty: some violent disease or unfortunate accident conveys him to the silent tomb. Dangers and accidents multiply with years; negligence and excess lay the seeds of maladies, and dispose our bodies to receive those which are epidemical. The latter age is still

more dangerous. In a word, half of those who are born into the world, are seen to perish within the short space of their first seventeen years! O! may this concise but faithful history of human life induce us to number and improve those days which are so short and important; and to redeem that time which passes with such inconceivable rapidity. Even whilst we are making these reflections several moments are gliding imperceptibly away: yet what a precious treasure of hours and days might we amass, if of the numberless moments which may yet remain at our disposal, we were frequently to devote some to so beneficial a purpose. Let us seriously consider that every instant is a portion of life impossible to recall, but the remembrance of which may be either the source of joy or sorrow. What a celestial pleasure to be able to look happily on the past, and to say with veracity, "I have lived so many years, during which I have sown the rich seed of good works; I do not wish to begin them again, but I do not regret that they have passed." That this language may be *ours* in the closing scenes of existence, let us pray for grace to fulfil the end for which life has been given us, and to devote the short space of time to the great interests of eternity.

JANUARY XXVIII.

The Frost sometimes seen on Windows.

This little phenomenon discovers the beautiful order, variety, and simplicity which nature combines in her smallest productions. We frequently admire the extraordinary figures which appear upon frozen glass; but we seldom consider them with that attention the subject requires, however unimportant it may appear in itself. The phenomenon in question has its principle in the fluidity of fire. When confined in the warm air of a room, it tries to spread itself on all sides, and to penetrate that part where there is least matter homogeneal to its own. Hence it is that it even glides through the close contexture of glass, which contains neither air nor heat; and in its passage it leaves at the inside of the panes, and near any apertures, those particles of air and water to which it was united. It next forms itself into a cloud, which thickens in proportion as the fire pas-

ses out, till there remains too little in the apartment to preserve the thickened particles of water on the glass in a state of fluidity: these then congeal, and the nitre in the air uniting with them produces those various and singular appearances with which the windows are covered. The beginning, or first sketch of these figures, is formed by very small filaments of ice, which insensibly unite, till the whole glass is covered with an icy crust. These filaments are the origin of all the figures; and the first weaving of them may be distinctly seen.—We at first perceive some extremely fine lines, from which proceed others, nearly resembling the filaments of a quill; and these in their turn produce other branches. When it freezes hard, and the first coat of ice becomes thick, the most beautiful flowers and lines of every sort, sometimes straight, sometimes spiral, are produced. There is reason to believe, that this great variety of figures does not proceed entirely from the motion of the air, and the particles of fire, but, in some degree, from the imperceptible chinks or clefts which are in the glass. But, whatever be the cause of the phenomenon, it is certain this *lusus naturæ*, or sport of nature, exhibits a great deal of art united with much simplicity.

Some of my readers, considering this phenomenon as of no other value than to amuse the eye for a short time, may condemn the subject as trifling and unimportant: but it seems to me, that minute points of this sort have greatly the advantage of those which too often occupy our time. With what frivolous matters, what mere nothings, are we sometimes amused! Would not certain phenomena of nature, which we consider as trifles, be as well worth thinking or speaking of? Such researches are agreeable to a mind desirous of information, however small the object. Let us only divest ourselves of prejudice, and the puerile ideas we are apt to form of the works of nature, and we shall often discover master-pieces where ignorance perceives nothing but trifles; for nature shows her wisdom even in her smallest works; and thus invariably distinguishes them from the productions of art. It is, in reality, impossible for an object to be *trifling* which furnishes matter for useful reflection: and, for my own part, I do not disdain to read, even on frozen glass, a truth which may have considerable influence upon my happiness.

Behold the flowers which the frost has delineated upon yonder window! With what art and beauty are they arranged and diversified! Yet a single ray of the noon-day sun completely effaces them! Thus the pencil of imagination represents every thing to us in the most agreeable manner; but all that it exhibits as peculiarly attractive in the possession of worldly goods, are merely gaudy and unstable images, which inevitably disappear in the light of reason.—Such are the interesting and instructive lessons which may be derived from the apparently trivial subject of this day's meditation.

JANUARY XXIX.

The Use of Bread.

Of all the food our beneficent Creator distributes to us with such profusion, bread is, at the same time, the most common and the most wholesome. It is as necessary at the table of a prince, as at that of a labourer; and the sick person is as much refreshed by it as the blooming son of health. It seems particularly designed for the use of man; for the plant which produces it can be made to grow in every different climate: and it is difficult to find, on the habitable earth, a country where wheat will not ripen, if it be properly cultivated. An evident proof of the indispensability of this aliment is, that it is the only food of which we may continually eat without being cloyed. All those delicate and expensive viands which pride and luxury have invented, soon cease to flatter our palates, if we partake of them too frequently; but we always eat *bread* with pleasure; and the old man who has been nourished by it for the space of seventy years, continues to eat of it with cheerfulness, when, to him, all other food has entirely lost its savour. We ought to look up to our Creator each day, as we eat our bread, and praise him for this invaluable blessing. Let us choose of all food that which we like best. Is there any more natural, more generally wholesome, more strengthening, or nourishing? The smell of the most precious aromatics is not so refreshing. The former, indeed, flies more to the head, and is more heating; but the smell of bread, simple as it is, may serve to convince us, that it contains parts essentially proper to form and repair the nervous

fluid. What demonstrates its nutritive quality is, that it dissolves, and becomes like paste, as soon as it is moistened with water; consequently easy for the stomach to digest. Let us here reflect on the visible care the Creator has taken of our health, in appointing us this food. Our best juices are liable to be corrupted: it was therefore necessary to give us nourishment which could resist corruption. Now this quality is in bread; which, being composed of vegetables, and having something acid in it, is an excellent preservative against putrefaction.

I should be altogether unworthy of this excellent and nutritious aliment, were I not to reflect with pious gratitude on that beneficent Being who has caused it to grow out of the earth for my convenience and support. By daily participating of the blessing, and remaining unmindful of its Divine Author, I should, indeed, resemble the beasts of the field. O my God! preserve me from such ingratitude, and while I know the hand that feeds me, may I admire and bless it incessantly!

But how can I better evince my gratitude than by sharing the bread which I so abundantly enjoy with the unfortunate sons and daughters of indigence? O my God! how many of thy creatures are less amply provided for, though, in all probability, more deserving than myself! Thou knowest I am willing to distribute to my poor brethren according to my ability, but I have not the means to relieve them all. Let thy merciful goodness extend to them, and give unto them not only a supply of bread, but permanent peace and tranquillity of mind. May I also partake of these invaluable gifts; then shall I enjoy greater felicity with bread for food, and water for drink, than the epicure whose table groans beneath the most luxurious dishes and most costly wines.

JANUARY XXX.

Our Duty in regard to Sleep.

A MELANCHOLY remark we have often occasion to make, is, that most people lie down to sleep with an inconceivable carelessness. Considering it as merely relating to our bodies, the revolution which sleep occasions ought to appear of great importance: but if we

reflect upon it in other respects, and represent to ourselves what may occur during our nocturnal slumbers, it will appear both negligent and presumptuous to cast ourselves into the arms of sleep, without taking proper precautions, and being, in some degree, prepared for whatever may take place. Those persons, indeed, who, during the day, are altogether unmindful of moral and religious duties, cannot be expected to become more serious at the hour of repose. Let *us*, however, learn in what manner we may glorify God, and act as becomes the character of Christians in this respect. What grateful thanks are due to the Creator for the blessing of sleep! Some persons have never known its real value, because it has never been denied to their wishes; but were sickness, sorrow, fear, or old age, permitted to deprive them of its balmy influence, how readily would they acknowledge it to be one of the most pressing necessities of nature, and one of the most inestimable blessings of the Deity! But should they wait till they lose this blessing, to become wise? No: but, while they enjoy the advantages of sleep, and that the return of each night renews to them its salutary effects, never let them give themselves up to it, without a lively sense of gratitude towards their heavenly Benefactor: and this gratitude should equally prevent them from the neglect and abuse of this invaluable blessing. It is highly reprehensible to prolong, through idleness, the hours designed for repose. Nature, in this respect, as in every thing else, is content with a little; and seven or eight hours of quiet, uninterrupted sleep, are generally sufficient. But we are not less blameable, when, through avarice, ambition, or any other motive of that sort, we lose our necessary rest. In both cases we violate the laws of nature, and act ungratefully toward the God of all our mercies.

Above all things, let us learn to close our eyes in a suitable frame of mind. How should we act under a full conviction that from the arms of sleep we must pass into those of death? Should we not employ our last waking moments in preparing for this solemn transition, in examining our past life, and in seeking, through the blood of Jesus, the remission of our sins? Let us then recollect, at the returning hour of rest, that this case is extremely possible. It is computed that every winter's

night, that is to say, in the space of twelve or fifteen hours, *fifty thousand* souls are summoned into eternity: and who can presume to assert that *our* names are not in the list of those who must this night submit to the mandate of the king of terrors? I shall now leave it to the decision of every one's heart, what they would have done, if, in the midst of their recent slumbers, they had been called upon to appear before the tribunal of Jesus. If, in the course of the last night, the Almighty had disposed of them, would they have been prepared to appear before him? O God, to whom all hearts are open, and from whom no secrets are hidden, what can we conceal from thee? We daily feel our weakness. Pardon our sins, we beseech thee; and for the Redeemer's sake enter not into judgment with us.

JANUARY XXXI.

Revolutions which are constantly in Nature.

All the vicissitudes of nature are derived from those invariable laws established by the Creator, when he formed the universe out of nothing. For five thousand years, there has been seen in the sky, and upon the earth, at certain periods, the return of the same variations and the same effects. The sun, moon, and stars, continue constantly in the same course that was originally prescribed to them. But who is it that supports and directs them? Who teaches these bodies the course they ought to take; or points out to them the precise time for their respective revolutions? By whom are they enabled to move, at all times, with the same degree of velocity; or by what restraining power are they prevented from falling upon our globe, or from losing their path in the immense expanse of heaven? All these questions lead us to God. It is he who appointed the circles they were to describe; and who supports, guides, and prevents them from confusion. By laws unknown to us, he causes those celestial bodies to move with incredible swiftness, and with such perfect regularity that nothing can disturb them. Nearer to us, there are, in the elements, continual revolutions, though invisible to common observers: the air is in perpetual motion round our globe; the water continues its course in the same manner, without ceasing; the rivers run into the sea;

and, from its broad surface, vapours arise, which produce clouds: these falling again upon the earth, in rain, snow, and hail, penetrate the mountains, and fill the springs; whence rivulets, uniting with each other, become rivers, and are considerably augmented in their course. Thus, the water, which had fallen from the cloud, returns back into the sea. The seasons also continue a limited time, and succeed each other in an established order. Each year the fertile earth reproduces her numerous plants and crops: yet she is never exhausted; for by means of a constant circulation in all nutritive particles, what ever she yields is restored to her again. Winter comes at the appointed period, and leads her to the repose she requires; and the succeeding spring restores her lost and scattered progeny. The same circulation takes place in the body of every living creature: the blood flows continually through its several channels, distributing to each limb the nourishing juices it requires, and then returning to the heart, whence it first proceeded. All these revolutions lead us to reflect on the Supreme Being who laid the foundation of them at the creation of the world; and who, by his power and wisdom, has continued to direct them to this very moment. These reflections are calculated to improve our minds, and are peculiarly appropriate at the close of this month. Under the wise direction of Providence, all the revolutions which have occurred in nature since the commencement of the present year, have been produced in a way the most consistent with the designs of our Creator. Each day the sun has enlightened us, and, after fulfilling his design, he has given place to the night: and every day the goodness of God has been renewed towards us, in rendering every change and revolution conducive to our welfare.

And now this month, with all its days, its hours, and its moments, is for ever passed away: nor is it possible that it should return to us, were we to live fifty winters more. However, all the wheels of the great machine, the system of the universe, will at last stand still; the circular motion of the globes will cease; the springs of nature will be broken; and days, months, and years, will be swallowed up in the abyss of eternity: then, O eternal, unchangeable, and infinite Being, thou shalt still exist; and, through thee, the duration of my exist-

ence shall be prolonged! God be praised, that each month which passes while I am upon earth, draws me nearer the commencement of *eternal* felicity.

FEBRUARY I.

Every Thing in Nature tends to the Good of Mankind.

We cannot be too sensible of the love and preference with which we are honoured, by God's distinguishing us so advantageously from other creatures. Let us feel, as we ought, the great happiness of being particularly the objects of his beneficent liberality; of being, in some measure, the centre of all he has produced for the manifestation of his glorious attributes. It is for us that all nature acts and labours in the earth, in the air, and in the waters: for us the horse's hoof is furnished with that horn, which it would have no occasion for, were it not to draw burdens, and to climb rugged acclivities: for us the silkworm spins her clue, shuts herself up in it, and afterward abandons to us the result of her industry; for us the gnat deposits its eggs in the water, for food to the lobsters and other fish, which themselves serve for our subsistence; for us the bee collects nectareous honey from every opening flower; and for us the obedient ox submits to the yoke, requiring no other reward than a little food for all his labours. For us, also, the forests, fields, and gardens, abound with riches; the greater part of which would be lost unless converted to our use; as would also the treasures contained in the bowels of the mountains. It is true, that we have, beyond comparison, more wants than the brute creation; but we have also more faculties, talents, and industry, to make every thing around us conduce to our service and pleasure. Millions of creatures contribute to supply us with food, clothes, habitations, and innumerable conveniences and enjoyments. If God has created us with so many wants, it is precisely to procure us a greater variety of agreeable sensations. It would be impossible to satisfy those multiplied wants, if animals had as many as ourselves; and it is in order that we should have plenty, that the things they require are generally such as mankind can make no use of. But it is not our food only that God has provided with so much goodness—he has deigned to procure us a thousand o-

ther enjoyments: it is for us that the lark and the nightingale pour forth their most mellifluous notes; that the numerous tribes of Flora exhale their richest fragrance; and that the fields and gardens are adorned with such brilliant colours. Above all, we are endued with *reason*, which enables us to make every thing contribute to our support and pleasure; to rule over animals; to subdue the whale and the lion; and, what is still more precious in another way, to take pleasure in the works of God—to contemplate their beauty, greatness, and magnificence; and to admire their order and harmony.

O man! thus privileged and loaded with favours, how canst thou ever be sufficiently grateful to thy heavenly Benefactor! What love can be perfect enough to answer in any degree to that which God has shown unto us? To increase more and more our love and gratitude, let us frequently reflect on the boundless liberality of the Father of nature, on the preference with which he honours us, and on the innumerable blessings we receive from him every hour. Let us often reflect that there are no creatures upon earth so favoured as we are: let us look around, and contemplate all nature: let us ask the sky, the earth, and the sea; all the animals and plants; in a word, every thing that exists; and they will unitedly tell us, that we are the happy beings to whom all others are subservient, and for whom the whole creation was formed. Let our souls therefore be penetrated with the most lively gratitude, and the most ardent love, towards our glorious Benefactor; and let it be our first care, our only ambition, to devote our lives and services to Him who has given life and being, on our account, to so many different creatures. These are the resolutions we ought to form in the beginning of this month. Every day we shall have fresh occasion to acknowledge and praise the paternal care of Providence. Let us taste and relish the divine goodness in each morsel of bread afforded for our support, and in every glass of water which serves to allay our thirst.

But, above all, let us acknowledge the mercies of God in the blessings he reserves for us hereafter. It is for us, that Christ designs that ineffable happiness which his faithful disciples will enjoy around his throne. The blessed spirits will there be our companions and friends;

and we shall partake with them of that felicity which far surpasses human comprehension. What, indeed, are the blessings of this life, in comparison of the glory which awaits us in eternity? It is true, that even here we continually experience the effects of God's benevolence, and are surrounded with the wonders of his goodness; but, in this world, all pleasures are mingled with pain, and perfect happiness can be found only in heaven.

FEBRUARY II.

The Influence which Cold has upon Health.

In these severe winter months we frequently hear great eulogiums on the other seasons, spring, summer, and autumn, whose blessings are seldom noticed in possession, but are most extravagantly praised when we can no longer enjoy their advantages. This is the absurd but general conduct of mankind: while possessed of certain benefits or privileges they undervalue them, and are only convinced of their real worth when called to suffer the privation of them. But is it, in fact, true, that those three seasons are exclusively entitled to attention and praise? or is winter, in reality, what it is generally represented, inimical to pleasure, and destructive to health? As this prejudice may considerably influence our peace and happiness, it may be necessary to reflect impartially on the advantages which the present season procures for us in respect to health.

Spring and autumn are very dangerous, on account of the sudden changes in the weather. In summer the air is filled with corrupted vapours, or at least with such as have a tendency to become putrid: it is the time we are most liable to catch colds; which occasion a multitude of painful, and sometimes fatal, disorders. Winter has not these inconveniences: the cold favours insensible perspiration, and prevents, by that means, many terrible evils produced by its suppression. By means of a gentle, moderate perspiration we feel lighter and easier, the blood purifies, the appetite increases, and the mind becomes cheerful and serene. The cold also braces and strengthens the solids, and by that means supplies the want of exercise. What inconveniences are occasioned by the violent heats of

summer! What oppression and heaviness do we feel when exposed for any length of time, in the open air, and compelled to sustain, as it were, the whole weight of a burning atmosphere! How do we long for the nocturnal breeze, to revive our drooping spirits, and to recruit our exhausted strength! The fine days of winter have not these inconveniences: we have more activity, strength and courage; and are better disposed for labour or for pleasure: as the cold animates our spirits, and excites us to take such exercise as may procure us a moderate warmth. Hence it appears sufficiently obvious, that winter contributes essentially both to our health and our pleasures. The Creator has considered our welfare in this season, as much as in any other; and has formed the wisest plans for the preservation and happiness of his creatures, in every month of the year. If, therefore, we hear persons repining in discontent, or complaining that they do not enjoy as good health in winter as in the other seasons, we may rest assured that the fault is indisputably their own. Perhaps they consume their time in indolence, and, continually shut up in warm apartments, never breath a pure air, nor profit by the fine winter days. Probably they abandon themselves to vexation and anxious solicitude. Perhaps they are guilty of intemperance in eating and drinking: or possibly, having abused the gifts of summer, they have ruined their constitution, and now feel the sad effects of their irregularities. How happy might mortals be, how regular and excellent their health, would they but follow the simple rules of nature, and allow labour and rest, business and pleasure, alternately to succeed each other!

O my beneficent Creator! I acknowledge, with lively gratitude, the wise purposes thou proposest to thyself in the government of the world. I bless the paternal care with which thou providest for my preservation, peace, and welfare, through every change of the year. Shall I then be imprudent enough to render that season painful and disagreeable, which might become the source of the purest and most innocent pleasures? Shall I, in the levity of my heart, destroy that health and life which thou wouldst preserve with so much goodness? No; let me rather endeavour constantly to answer thy wise and beneficent views: then will content of mind

and cheerfulness make my days agreeable; while temperance and virtue will ensure a sound and durable state of health.

FEBRUARY III.

A Temperature always the same would not be good for the Earth.

We imagine that our earth would be a paradise, if, every where, or in every climate, there were an equal distribution of heat and cold, the same fertility, and the same division of day and night. Such are the ideas of poor, short-sighted, and selfish mortals. But supposing these things were actually arranged according to our wishes, and that, in every part of the globe, there were the same degree of heat and cold, is it certain that mankind would gain by it, in respect to food, convenience, or pleasure? So far from it, that, on the contrary, the earth would be the saddest and most miserable of habitations. The *present* plan gives to the works of our Creator a charming and infinite variety; but that which we might attempt to prescribe would be productive of the most tedious uniformity; while the earth would be deprived of its brightest charms, and the suspension of the rolling seasons, and the vicissitudes of light and darkness, would occasion the extermination of many thousand objects both in the animal and vegetable creation.

Among the immense multitude of natural productions, there are very few which can thrive equally in different climates. Many creatures which inhabit the polar regions could not possibly exist in warmer countries; while, on the other hand, the inhabitants of these would inevitably perish if exposed to the rigors of a northern clime. If, therefore, heat were equally diffused over the various parts of the earth, many of her present productions could no longer exist; nature would lose many of the charms of variety; and innumerable blessings would be completely lost to the human race. If every country produced the same things, and had the same advantages, all communication between different nations would cease; there would be no intercourse, nor commerce; and several arts and trades would be totally unknown. What would become of the sciences also, if

the mutual wants of different nations did not lay them under the happy necessity of communicating them to each other? Supposing, however, there were to be an equal diffusion of heat over the surface of our globe, how should we determine what that degree ought to be? Ought it to be every where as hot as in the torrid zone? Who could bear such a climate?—for the colder regions always taking away part of the heat from the hot countries, the heat which must then be spread all over the earth, would be much greater than that of the torrid zone is at present: men, animals, and plants, would all inevitably perish and be consumed. But suppose that there were, over the whole earth, that temperate heat which would suit all creatures, the air also must every where be of equal height, density, and elasticity; whence it would follow, that our earth would be deprived of one of the principal causes of the winds; the want of which would occasion mischief scarcely to be expressed. Air, which is so essential to the preservation of life, would become the worst of poisons, if it were not purified by the winds. Equality of heat over the whole earth, would therefore soon produce sickness, contagion, and pestilence; our fancied paradise would no longer be any thing but a desert and a real chaos.

Wise and beneficent Creator! all that thou hast done is right. This confession is the result of every reflection I make in contemplating thy works. I wish to accustom myself to think thus at the sight of every object in nature; and, if at any time I imagine that I have discovered a fault or imperfection, I would correct myself by remembering the infinity of thy wisdom and the weakness of my own understanding. Many things, which at first sight appear useless, and contrary to the order of the world, are arranged with admirable goodness and wisdom. What appears to me defective and imperfect, gives, to more enlightened minds, just reason to admire and praise the perfection of the Creator. And, supposing I should not always be sensible of the wisdom and goodness of God, in the creation and preservation of the world, it ought always to suffice for me to know, that whatever God does is right.

Such is the judgment I shall hereafter form of the moral government of God, and his conduct towards in-

telligent beings. As, in nature, he has distributed, in unequal degrees, heat and cold, light and darkness; so he has made great difference in his dispensations towards rational creatures, and has not regulated the fate of all in the same manner. But in this, as well as in nature, his ways are still the ways of wisdom and goodness. As I perceive that our globe could not subsist, if there were an equal degree of heat and cold every where; so it is also certain, that the happiness of the world would be destroyed, if there were a perfect equality in the lot of mankind. All that God has planned and ordered is perfect and admirable; and all his paths are mercy and truth to those who keep his covenant. To him be glory for ever and ever!

FEBRUARY IV.

The Use of Stars.

To every serious and contemplative being, the starry sky presents an admirable scene of divine wonders. The order, greatness, multitude, and brilliant splendor, of those heavenly bodies, must, indeed, afford a most pleasing spectacle to an attentive observer of the works of nature. The sight of the stars alone, supposing that we knew nothing of their nature and utility, would be sufficient to fill the mind with admiration and delight: for what can be more magnificent and beautiful than that immense expanse of the heavens, illuminated by numberless lights, which the azure sky makes appear still more brilliant, and all which differ from one another both in size and lustre? But would a Being infinitely wise have adorned the celestial vault with so many bodies of an immense magnitude, merely to please our eyes, and to afford us a magnificent sight? Would he have created innumerable suns, merely that the inhabitants of our little globe might have the pleasure of seeing, in the firmament, some luminous specks, the particular nature and purpose of which are very imperfectly known, and themselves but seldom observed? It will be impossible to indulge such an idea, if we recollect that there is, throughout nature, an admirable harmony between the works of God and the ends for which they were created; and that in all he does, he contrives the advantage as well as the pleasure of his

creatures. It cannot be doubted, but that God, in placing the stars in the sky, has had more important views than that of affording us an agreeable sight. Indeed, we cannot precisely determine all the particular ends the stars may answer; but, at least, it is easy to believe, that they must be designed for the advantage as well as the ornament of the world; as the following considerations may suffice to prove:—Among those stars which we can distinguish with tolerable facility, there are some which always occupy the same place in the heavens, and invariably appear over our heads: these serve as guides to the traveller during the obscurity of night, and not only point out a safe course to the mariner across the pathless ocean, but also inform him when he may undertake his voyage with the least danger. Other stars vary their aspect; and, though they always retain the same situation among themselves, they change the order of their rising and setting, in respect to us, from day to day. Even these changes, which never vary in their regularity, are of great utility to us; as they serve to measure time, and to determine it by settled rules. The regular revolutions of the stars, mark precisely the commencement and the end of the seasons. Hence the husbandman knows exactly when to sow his fields, and how to conduct every part of the rural economy. But, however considerable the advantage which the stars are of to our earth, it may be safely presumed that this is neither the only nor the most important design of the Creator in forming so many globes of such stupendous magnitude. Can it, indeed, be supposed that infinite wisdom would have strewed the immense expanse with so many millions of worlds and suns, merely that a small number of persons inhabiting our sphere should be informed of the measure of time, and the return of the seasons? Undoubtedly these innumerable globes are to answer more sublime ends, and each of them has its particular destination. All the stars are, in fact, so many suns, capable of diffusing upon other globes the blessings of light, heat, and animation; and it is absurd to suppose that God would have bestowed this faculty upon them for no purpose. Would he have created suns, whose rays can reach even to the earth, without having produced worlds also to enjoy their benign influence? God, who has

peopled this earth, which is a mere speck, with so many living creatures, would he have placed in the immense space so many desert globes? No, certainly: perhaps each of these fixed stars, which we see by thousands, has worlds revolving around it, and for which it has been created: perhaps these spheres, which we see above us, serve as abodes for different sorts of creatures, and are peopled, like our earth, with inhabitants who admire and praise the magnificence of the works of God: perhaps, from all these globes, as well as from ours, there rise continually, towards the Creator, prayers, and hymns of praise and thanksgiving. It is true, these are but probable conjectures; yet, to every true lover of God, they must afford the sincerest delight. How sublime is the idea that, exclusive of the small number of rational creatures who inhabit this globe, there are innumerable multitudes in those worlds which appear from hence to be but mere luminous points. No enlightened mind, indeed, can possibly suppose that the empire of the Most High extends no farther than the limits of our earth. Beyond this world there is an immensity, in comparison of which our globe appears as nothing. Innumerable beings may exist there, all of whom (happy as their situations can admit) magnify the name of our great Creator, and probably aspire to a superior world.

FEBRUARY V.

The wonderful Structure of the Eye.

The eye infinitely surpasses all the works of human ingenuity, and its formation is the most astonishing thing which the mind of man can clearly comprehend. The most skilful artist could invent no machine of this kind which would not be very inferior to the eye. Whatever sagacity or industry he might have, he could execute nothing which would not have the imperfections necessarily belonging to all the works of man. We cannot, it is true, perceive clearly the whole art of Divine Wisdom in the formation of this fine organ; but the little we do know is sufficient to convince us of the infinite knowledge, goodness, and power, of our Creator. The most essential point is for us to make use of this knowledge, weak as it may be, to magnify the name of the Most High.

In the first place, the disposition of the external parts of the eye is truly admirable. What intrenchments and fortifications has the Creator provided for its security! It is placed in the head, at a certain depth, and surrounded with hard and solid bones, that it may not easily be hurt. The eye-brow contributes materially to its preservation, by precluding the admission of dust, or drops of perspiration from the forehead; and the eye-lid is not only another defence, but, also, by closing when we go to sleep, it prevents the light from disturbing our repose. The eye-lash still adds to the perfection of the eye: as it saves us from a too strong light, and guards us from the smallest dust, which might otherwise injure the sight. The internal structure of this organ is still more admirable. The whole eye is composed of coats, humours, muscles, and veins. The tunica, or exterior membrane, which is called the *cornea*, is transparent, and so hard, that it can resist the roughest shocks. Behind that there is another called the *uvea*, which is circular and coloured. In the middle of this there is an opening, called the *pupil*, and which appears black. Behind this opening is the *crystal*, which is perfectly transparent, of a lenticular figure, and composed of several little flakes, very thin, and arranged one over another. Under the crystal there is a moist and transparent substance, which is termed the *vitreous humour*, because it resembles melted glass. The cavity, or the hinder chamber, between the cornea and the crystal, contains a humour, fluid and limpid as water, for which reason it is called the *aqueous humour:* this is capable of recruiting itself even when it has run out from a wound of the cornea. Six muscles, admirably arranged, move the eye on all sides,—elevate, depress, or turn it to the right or left, obliquely, or round, as occasion may require. What is most admirable, is the *retina*, a membrane which lines the bottom of the eye: this is nothing but a web of extremely fine fibres, fastened to a nerve or sinew, which comes from the brain, and is called the *optic nerve*. It is in the retina that the vision is formed, because the objects paint themselves at the bottom of the eye on that tunic; and, though the images of exterior objects are painted on the retina, in an inverted order, they are still seen in their true position. Now, in order to form

an idea of the extreme minuteness of this picture, we need only consider, that the space of half a mile, that is to say, of more than eleven hundred yards, when represented in the bottom of the eye, occupies but the tenth part of an inch.

I return thee thanks, O Lord God! for having formed my eye in so wonderful a manner. My soul acknowledges thy infinite wisdom, power, and goodness. Hitherto, I have not considered my eye as I should have done; that is, as a master-piece of thy workmanship, and as a demonstrative proof, that even the most minute parts of my body have been formed by thee for most useful purposes. I now begin to see a little the wonders of thy wisdom; and I am struck with astonishment in reflecting on myself and all the objects which thou hast formed. O, wise and almighty Creator! pardon me, if hitherto, in making use of my eyes, I have not thought of thee with the highest gratitude. Dispose me, to remember thy blessings more gratefully! Teach me to use them only for the purposes thou designedst them, and never to profane or dishonour these fine organs by any fault of mine! Grant that hereafter I may frequently employ them in examining thy works; and that every time I contemplate either the heavens, the earth, or myself, I may be induced to praise and bless thy wonderful goodness! and when I see the numerous evils and calamities of a great part of my fellow-creatures, let not my eyes refuse the tears of pity, nor my heart be shut against sentiments of compassion! Thus shall I fulfil the views of divine goodness, and enjoy the approbation of my Father and my God.

FEBRUARY VI.

On Fogs.

Amongst the numerous meteors seen in winter, one which merits particular attention, is the fog. This is simply a collection of watery and sulphureous vapours, which fill the lower region of the atmosphere, and are there condensed. This condensation is principally occasioned by cold: and, in order to form fogs, the air must be sensibly colder than the earth, whence there arise continual exhalations. Besides that the fogs shed on the earth a gentle moisture, they afford us a very a-

greeable sight: all that we see, far or near, the sky or earth, appears confusedly enveloped in a sort of grey curtain: all around us, and over our heads, we see nothing but darkness; and the eye wanders every where without being able to distinguish objects. The rising sun labours a long time to pierce through these mists, and to restore the earth to its former appearance. At length, however, it succeeds in dissipating these vapours; which sometimes descend upon the earth, and sometimes rise into the middle region of the air. By degrees the surrounding objects rise out of obscurity, and appear again in their usual state: the sky resumes all its brightness and serenity; and it is only near the ground, or on the roofs of houses, that any traces remain of that fog which for several hours had covered the horizon. While contemplating the appearance of this meteor, memory naturally reverts to those unhappy times when the sciences were completely obscured by the impenetrable mist of ignorance and superstition. In what gross darkness were provinces and kingdoms immured before the luminary of truth could show himself in all his splendor! The human understanding was so extremely dim and limited, that men scarcely comprehended the very objects which surrounded them; and such was the amazing power of error, that no ray of light could penetrate into souls darkened by bigotry and prejudice. At last the sun broke out in effulgent majesty, and suddenly illuminated those countries which, during whole centuries, had been buried in the deepest shades. Truth was now distinguished from error; a glorious eternity was opened to view; and mortals began to feel the importance of their destination. Blessed LUTHER! this thou hast effected, through the grace and assistance of God. Thy name shall ever be honoured among us, and thy memory shall be eternally honoured.

It is, however, but too true, that, during the days of my earthly pilgrimage, I shall still walk comparatively in darkness. The mist which surrounds me precludes a clear and distinct view of futurity. My ignorance, prejudice, and credulity, still increase the darkness of my present state. O may they soon be dissipated! May the light of truth and joy enlighten me in this vale of obscurity! But, thanks to God! a way is open to me,

and I see, through the surrounding shades, the path that leads to a blessed eternity. Every cloud will soon vanish, and I shall be transported to a scene of light and felicity, which no shade will ever darken. There I shall perceive, by the light of heaven, what had appeared on earth dark and gloomy; there shall I feel the wisdom and holiness of those ways of Providence which are here incomprehensible; there my soul, penetrated with admiration and gratitude, shall behold the wonderful connexion and complete harmony of the works of the Most High.

FEBRUARY VII.

The Flux and Reflux of the Sea.

THE greatest part of the surface of the earth is covered with water, which is called the sea; and is very distinct from lakes and rivers; which contain more or less water, according to the different seasons, whilst the vast body of the ocean continues almost invariably the same. But the sea is observed to ebb and flow twice every day, according to certain rules. When it has attained its greatest height on any shore, it begins to decrease, and subsides gradually for the space of six hours, when it is found at its lowest ebb. At the end of six hours, it begins again to rise; and this increase lasts also six hours; at the end of which, the sea has again attained its greatest elevation. It then retires again for six hours, and rises as before. So that, in the space of twenty-four hours, the sea twice rises and falls, or is alternately at the highest and lowest ebb. This regular and alternate motion of the sea, which rises towards the shore, and withdraws again, is called flux and reflux. When the sea swells, and rises towards the coasts, it is called the flux; and the motion which forces the water toward the main, is called the reflux. It is a remarkable circumstance, that the tide is regulated according to the course of the moon; the flux being greatest toward the time of the new and full moon, and least during the quarters. The motion of it is also much more considerable in spring and autumn, than in the other seasons: on the contrary, the tides are much weaker during the solstices. This phenomenon is particularly observable in the ocean, where the water occupies a

considerable space; and is much less so in limited seas, such as the Mediterranean. Finally, the interval between the flux and reflux is not exactly six hours: it is eleven minutes more: so that these revolutions do not happen the next day at the same moment, but three quarters of an hour later. It is also worthy of remark, that they do not return at the same hour, till the end of thirty days, which is exactly the period of a lunation. From this constant and regular phenomenon, we may certainly conclude, that the flux and reflux of the sea have some intimate connexion with the motion of the moon. But, without searching deeper at present into the cause of this effect, in which there is still much obscurity; without deciding whether the flux and reflux are owing to the pressure of the moon on the waters, or the gravitation of the particles of the earth towards the moon, let us rather reflect on the ends which God proposes in these remarkable revolutions. It is a pardonable ignorance, not to be able perfectly to explain the laws and the course of nature; but it is an inexcusable want of attention and gratitude, not to reflect on the happy effect those laws, and those great phenomena, produce upon our earth, or to forget what we owe to the beneficent Father of nature.

The first advantage we have from the flux, is the sending back the waters into the rivers, and making them deep enough to be able to convey, to the very gates of great cities, burdens and merchandize, the carriage of which would otherwise be impracticable. Vessels wait some time for this increase of the water; and the mariner gladly takes advantage of it, to enter bays without touching the bottom, or to get into the channels of rivers without danger. After this important service, the tides fall, and, leaving the river to return to its shores, they facilitate the enjoyment of commodities to the inhabitants. Another advantage we have from this perpetual motion of the water, is, to prevent it from stagnation or putrefaction. It is true, the wind also contributes to this end; but, as there is often a perfect calm in the water, there might result from it a putrefaction in the bason of the sea, which is the reservoir for all the waters of the earth to flow into. God has, therefore, ordered the flux and reflux, to prevent injurious stagnations. The motion of the water, rising and

falling, attenuates and separates those corrupted vapours; and, in order to preserve the sea in its purity, the flux and reflux mix and disperse the salt, of which it is full, and which would otherwise sink speedily to the bottom.

These reflections may naturally remind us of a circumstance which is intimately connected with this phenomenon. Our life is but a flux and reflux—it increases and decreases: every thing is inconstant, and liable to change; nothing is durable: there is no permanent joy, hope, or happiness on earth; we swim in a rapid and inconstant river: let us then take care not to be drawn into the abyss; and let us endeavour to gain the happy port, the smiling and cheerful shores of eternity. On the other hand, let us bless God, that our evils and anxieties are of short duration: excessive and lasting grief or pain, is as little compatible with our nature, as constant and perfect happiness. These changes are certainly advantageous. If we enjoyed, through the whole course of our lives, an uninterrupted felicity, we might easily grow proud, and forget God: as, on the other hand, a continual train of disgraces and misfortunes would plunge us into fixed melancholy, and harden our hearts. Let us therefore bless our heavenly Father for his wise arrangements, and endeavour, through every event of life, in prosperity and adversity, to conduct ourselves in such a manner as may be consistent with our faith, and with the hope we entertain of eternal life.

FEBRUARY VIII.

The Sun does not always appear.

Clouds of rain and snow do not always cover the sky: but after showering upon the earth the ample provision of water they had collected, they sometimes separate, and the most cheerful serenity overspreads the firmament; while the aspect of the sun, after an obscurity of several days, revives and gladens the various tribes of animated nature. During summer we are accustomed to the presence of this beautiful luminary; but, as it seldom appears in winter, and then only for a few hours, we learn the better how to appreciate its blessings. And this remark may be justly made in regard to every other gift of God! Is it not true, that we are but little

sensible of the blessings of this life, and that we too often regard them with indifference, when in our possession? Health, repose, friendship, an easy income, and a thousand other blessings, which we daily enjoy, do not appear so considerable as they really are; and we often continue insensible of their value, till we have lost them. We must be on a sick bed, deserted by our friends, and reduced to poverty, before we fully feel the happiness of enjoying good health, of having a faithful friend, and the means of procuring a comfortable subsistence.

When the sky brightens up, after having long been darkened with clouds, the earth still retains a gloomy aspect, and even the solar rays, however cheering, are not capable for some time of restoring all its beauty. The sun has not yet sufficient power to conquer the cold, which has hardened the earth, nor to revive nature, which appears dead. Thus the light of the understanding does not always warm the heart, as those unhappy beings can attest who are doomed to languish in misery and affliction. It sometimes happens, that, in the winter of life, or in other sad and trying circumstances, we see joy and pleasure at a distance, without being able to taste the fruits of them. Our thanks, however, are indisputably due to our heavenly Benefactor, for those gleams of joy which occasionally refresh our souls, and soften our cares and sorrows, though it be but for a few moments. Here I pause, O my God! and solicit this favour—If it be thy will that some of my latter days should be sad and gloomy, let me not murmur at it, nor lose my courage; but mercifully grant, that my soul may be now and then revived with some rays of joy, and that I may have a distant view of a happy futurity. On this subject I only presume to ask some moments of ease and comfort, which may enable me to support, with courage, the cloudy days of adversity. How uncertain is the serenity of the sky in winter! How little can we depend on the beneficent rays of the sun! It appears now with mild majesty; but it will soon be obscured by clouds; and, before noon, the splendor and beauty with which it has enlivened the earth, will all disappear. Such is also the uncertainty of every scene through life. We can never promise ourselves lasting or uninterrupted happi-

ness. This consideration ought to make us wise and prudent in the days of prosperity, and moderate our love of earthly enjoyments. Every thing is liable to change. Virtue only is unchangeable. That alone can enable us to support the vicissitudes and distresses of this world, and give us fortitude to bear adversity or prosperity, till it lead us to those blessed regions where we shall be perfectly happy, without a shadow of variation.

FEBRUARY IX.

Earthquakes.

The globe which we inhabit is liable to be affected by two kinds of shocks; one of which is occasioned by the action of subterraneous fires, and the explosion of volcanoes. These commotions are only felt at small distances, and only when the volcanoes work, just before a complete eruption. As soon as the matter which forms the subterraneous fires begins to ferment and blaze, the fire makes an effort on all sides; and, if it does not find a natural vent, it raises the earth, and forms itself a passage by violent disruption. But earthquakes of this kind only extend for the space of a few miles: they shake the earth like the explosion of a magazine of powder; which produces a shock, and a sensible commotion, at several miles' distance. But there is another sort of earthquake, very different in the effect, and perhaps in the cause also: I mean those terrible shocks which are felt at great distances, and which shake a long tract of ground, without producing any new volcano. There are instances of earthquakes which have been felt at the same time, in England, France, and Germany. These extend much more in length than in breadth. They shake a chain or zone of land, with more or less violence, in different parts; and are generally attended with a hollow noise, like a heavy carriage running very rapidly. The following observations may explain the causes of this sort of earthquake: —All inflammable matter, capable of explosion, produces, like gunpowder, a great quantity of air. This air produced by fire is so rarefied, that it must cause very violent effects, when it has long been shut up and compressed in the bowels of the earth. Suppose then,

that, at a very considerable depth, such as one or two hundred fathoms, there should be sulphureous matter, which should take fire by means of the air: it must of course seek a vent, and, if it find none, it will necessarily occasion the most violent shocks. It is impossible to express how fatally dreadful earthquakes of this kind are. Of all the desolations, of all the catastrophes upon earth, there are none so formidable, so destructive, and which so completely baffle all human foresight and prudence. When rivers overflow their banks, swallow up provinces, and sweep away whole villages, there is still some resource: men may retire to the tops of their houses, flee to the summits of the mountains, or oppose dikes to the fury of the floods: but in earthquakes such expedients would be impossible or unavailing. There is scarcely any other kind of danger but may be eluded. Lightning, even in its most terrific effects, has never consumed whole towns and provinces; and though the pestilence may nearly depopulate, it never destroys entire cities: but the calamity under consideration extends with irresistible power over a whole country, and swallows up kingdoms and nations, without leaving a single vestige of their former existence!

Almighty God! who can stand before thee when thy power is displayed, or who can resist thee when thou arisest to judge the nations? The earth trembles before thee, and is shaken! The foundations of the mountains are troubled, and quake, when thy anger is kindled; the mountains tremble, and the hills disappear. The earth quakes at thy presence; the habitable earth, I say, and all who inhabit it. Thy anger spreads like fire, and the rocks are split asunder before thee. Who would not fear thee, O Ruler of the earth! Yes, Lord, we acknowledge and adore thy sovereign majesty. Thy judgments are incomprehensible; but, at the same time, thou art good and merciful in all thy dispensations.

O my soul! endeavour to learn this important truth —whenever the Lord displays his judgments upon earth; when he consumes whole countries in the height of his anger; even then his ways are ways of wisdom and goodness. Can we imagine, that it is to destroy *us* that he ordains these terrific shocks? Can we think that the Most High has occasion to make use of the elements and of all the strength of nature, to reduce *us*

to dust, when a single blast might effect that purpose? Let us rather acknowledge more sublime designs in these alarming catastrophes, and recollect that, in the Creator's plan, even earthquakes may conduce to the *general* welfare or preservation of nature. And supposing that some villages, towns, and provinces be buried under their ruins; supposing that many thousands of creatures be destroyed; what are ten thousand provinces, what are a hundred thousand creatures, in comparison of those innumerable beings who inhabit the universe? Let us rest assured that every thing frightful or terrific in nature, all apparent evil, and all the imperfections of the world, are really necessary for the preservation of the whole, and for the manifestation of the glory of God.

Great and Almighty Being! I will adore and bless thy name, even when thou sendest plagues, and scatterest terror and desolation on the earth. I will do more: I will rest with sure confidence upon thy paternal care. Though the mountains should fall and be ingulfed in the sea, and the world itself be destroyed; thou shalt still be my supporter, my refuge, and my unfailing friend. Let me only possess a clear conscience, and then I shall find nothing terrible in nature, though all should be convulsed and shaken around me. Though the earth should heave and open under my feet, and the whole world be crushed, I shall say, with pious confidence, Jehovah is my rock and my defence, and his powerful hand will ever support me.

FEBRUARY X.

The Order established by God relative to the Life and Death of Man.

God observes the most exact and wonderful order in regard to our life and death: both of which depend so little upon blind chance, that, on the contrary, they are regulated and measured in the wisest manner. If we make our calculation upon a certain period of years, we shall find the number of those who die at every age to be nearly proportionable. Out of thirty-five or thirty-six living persons, it is computed that *one* only dies each year: but the proportion of births is somewhat greater; so that if ten die, we may always reckon

there are twelve born. Besides this, the Divine wisdom is particularly manifested relative to the different ages of those who are taken out of time into eternity. In the first years, out of three or four infants, one generally dies. At five years old, one out of twenty-five; at seven, one out of fifty; at ten, one out of a hundred; at fourteen and fifteen, one out of two hundred. The twentieth year is nearly equal to the fifteenth; but after the twenty-fifth, the mortality becomes greater; so that at thirty years of age, one person ordinarily dies out of sixty; at thirty-five, one out of fifty, &c. In how strong a light does God manifest, on this occasion, his wisdom and goodness, by sparing younger people the most! And in what admirable proportion he takes them out of the world! Amongst a thousand who die, there is every where a nearly equal number of people of twenty, fifty, sixty, and eighty years of age. It is true, that particular modes of life, vices, wars, and epidemical disorders, may carry off more in some years than others: but even in these cases, Providence has taken care to set bounds to mortality in the following years, so that the loss sustained may be amply repaired. Let us add to this, that every season of the year is not equally dangerous to mankind. Spring carries off the greatest number: and the beautiful month of May, in which all nature seems to revive, is more destructive than March or April. But as soon as the heats increase with the month of June, disorders sensibly diminish. Summer and autumn are more favourable to health than winter.

Let us here admire the providence and tender care of that Almighty Being who has numbered the days of all his creatures, from the greatest potentate, to the poorest mendicant and the weakest infant at the breast. Convinced that the periods of our birth and dissolution have been exactly determined by the Creator, we should cherish a spirit of tranquillity, and learn to conquer our innate fear of death. God has indisputably determined the bounds of our life in the most advantageous manner; and if we enjoy the comfortable assurance of having found grace through Jesus Christ, we may be certain that our removal from the world will not take place till we attain the degree of piety designed for us, and become ripe for eternity. Seduced by self-

love, we often imagine, at the approach of death, that God acts with great severity, in calling us so soon out of this world; but let us be persuaded, that, however premature our death may appear, it happens at the properest time, both for ourselves and the rest of mankind. Let us not suppose, however, that the wise ordination of God relative to life and death, authorizes us to consider any particular number of years our own.—It is true, that fewer people die at fifteen than at three years old: but if, in a place where the population is not great, five young people die annually, how can we be sure that we shall not be of the number? or, if we pass our fifteenth year, that we shall not be carried off the next? Ought it not rather to animate us to accomplish the work appointed us, in the years we are likely to live; since it is altogether uncertain whether those wherein the mortality is generally greater, should not be fatal to us? Let us not be mad enough to flatter ourselves with the expectation of a long life: death makes its greatest ravages in the years of our greatest strength; that is to say, between forty and sixty-five years of age: and it is when we think we have formed the wisest plans for living long and happily, that the king of terrors appears suddenly in the midst of our hopes and projects. How wise, therefore, would it be to prepare betimes for that stroke which may every day surprise us! God, in his wisdom, has ordained that about thirty thousand persons should pay the debt of nature every day, and how probable is it that some of us may be included in this number! How important, then, is it that we should daily meditate upon death, and make suitable preparations for its reception. Let this be our chief employment, that, whenever we are summoned hence, we may be found watchful, and may be enabled, even in our last moments, to bless our God and Redeemer.

FEBRUARY XI.

Reflections on Ice.

WATER, when condensed by cold, insensibly loses its fluidity, and changes by degrees, as the cold increases, into a solid body, called *ice*. This change, which at the present season happens every day, deserves to be

examined closely: at least, it may be amusing and instructive to contemplate some of the phenomena discovered in frozen water.

Ice is a lighter body than water; for when frozen water is put into a temperate heat, so that it loosens from the sides of the vessel, the ice always swims at the top; whereas, if it were heavier, it must necessarily sink to the bottom. What makes it lighter, is the increase of its size; for though it becomes at first more compact by cold, it dilates considerably on being transformed into ice. This dilatation forms with so much violence, that it is capable of bursting a copper globe of such a thickness as would require a force of 28,000 pounds to produce a similar effect. When the ice first forms itself into a crust on the surface of water, it is completely transparent; but as it thickens it becomes opaque. This opacity results from the numerous bubbles of air, which are included in the ice, and occasion a more frequent refraction of the rays of light. Ice continually exhales many vapours, even in the severest cold. It has been found, by repeated experiments, that, in the sharpest air, four pounds of ice lose, by evaporation, a whole pound of their weight in eighteen days: and that a piece weighing four ounces, becomes four grains lighter in the space of twenty-four hours. Ice generally begins at the top of the water. It is an error to imagine that it forms first at the bottom, and afterwards rises to the top: for the cold, by which it is formed, proceeding from the atmosphere, cannot take effect at the bottom of the water, without having previously frozen all the upper part of it.

The manner in which ice is formed is equally remarkable. When it freezes slowly, we perceive a multitude of small threads come from the sides, within the glass, and take different directions, making all sorts of angles; and, uniting again, they form, at the top of the water, a pellicle of very thin ice. To these first threads others succeed, which multiply, and enlarge into the form of flakes: which, still increasing in size and number, unite with the first coat. By degrees, as the ice thickens, a multitude of bubbles appear; and the colder it grows, the larger these bubbles become: whence it happens, that the transparency of the ice diminishes, particularly towards the middle; and then it begins to dilate violent-

ly and swell into a greater size. When the cold is very sharp, and it freezes hard, there forms, on the surface of the water, a thin membrane, which, quitting the sides of the glass, extends towards the middle: under this membrane others appear in triangular shapes, the basis of which is at the sides of the glass, while the sharpest angles go towards the centre. It is thus that the crust of ice thickens, becomes opaque by the bubbles of air it contains, and, by dilating, becomes lighter and lighter.

Having reflected on these phenomena, is it not natural to say to one's self, What order, what harmony, reigns even in the minutest works of nature! With what weight and measure is every thing regulated, according to the times and seasons! How does each constituent part of nature concur to fulfil the designs of God! How great therefore will our admiration be, when we obtain a more perfect and distinct knowledge of all his wise purposes and designs!

FEBRUARY XII.

The Spherical Form of the Earth.

People generally suppose the earth to be an even plain, a round flat surface: but, if that were the case, the exterior limits of this surface would be easily found; and, in approaching any place, it would be impossible to see the tops of towers and mountains before the lower parts of them. The earth, then, must be a globe. But it is not exactly and strictly spherical, for it is a little raised under the line, and flattened towards the poles, so as nearly to resemble an orange. But that deviation from a circular form is very inconsiderable—at the most only fifty English miles; which is scarcely perceptible in a globe whose circumference is 25,020 miles, and its diameter 7964. There will be no doubt of the form of the earth being nearly spherical, if we consider, that in the eclipses of the moon, the shadow which the earth casts on that planet is always round. Besides, if the earth were not round, how could navigators have sailed round it; or how could the stars rise and set sooner in the eastern than in the western countries?

Here again we recognize the wisdom of the Creator,

by whom the earth is so admirably adapted for the benefit and convenience of its inhabitants. By the spherical form of our globe, the blessings of light and heat, so necessary for the preservation of animated nature, are equally and uniformly diffused; the due return of day and night is ensured; the requisite succession of heat and cold, moisture and dryness, is rendered constant and regular; water is equally distributed; and the salutary influence of the winds is universally experienced. We should be deprived of all these advantages, if our earth had any other form. Some countries would resemble a paradise, others a chaos; one part would be overwhelmed by water, the other burnt up with the heat of the sun. Certain countries would be exposed to furious tempests, which would destroy every thing, while the inhabitants of others would be stifled from want of air, the current of which would be nearly stopped. One part of the earth would enjoy the benign influence of the sun, while the other would be frozen with cold.

What pride and ignorance should we discover, if we did not acknowledge, in this, the hand of an almighty and benevolent Creator! Should we deserve to inhabit a world where all is so wisely ordained, if, like the brutes, we were insensible to this admirable plan, and to the numberless blessings which accrue from it? O God, our Creator, let us never be guilty of such base ingratitude; but, on the contrary, impress our minds with becoming sentiments of reverence and admiration, while we bow before thee and adore thy wisdom! Our weakness permits us to go no further. O! how should we desire to celebrate thy works with the fervor of the celestial choir, and to contemplate, with an enlightened eye, thy sublime designs! Even now thou condescendest to accept the feeble efforts we make to glorify thy name; and, notwithstanding their imperfections, thou knowest our praises to be sincere. With what holy transport, therefore, should we meditate on that state of bliss, in which a single moment will illumine us more than a century on earth! O God! how long shall it be ere we arrive at those blissful regions, where we shall become more intimately acquainted with thy works, and sing thy praises, with saints and angels, throughout eternity?

FEBRUARY XIII.

On the short Duration of Snow.

We see the instability of snow, and how suddenly the heat of the sun, mild and damp air, or heavy rains, cause it to disappear. Every thing around us changes its appearance in a few hours; and there scarcely remains the least trace of that snow which so recently covered the streets, villages, and fields.

Is not this sudden revolution calculated to make us reflect on the uncertainty and vanity of all earthly goods? Certainly it is not without design that nature presents us with such emblems of the frailty of sublunary objects. Each season of the year, and every consequent variation, asserts, with a strong and persuasive voice, that "all is vanity." And we have only to look around us in order to be convinced that all things below the skies are frail and perishable. How soon are we deprived of the pleasures of sense! and how frequently do they disappear when we have scarcely begun to taste their imaginary sweets! The rising sun beholds us cheerful and contented; but it frequently happens, before his departing beams have tinged the western clouds with gold and purple, that we are overwhelmed with sorrow and distress.

How often, in the course of our lives, have we experienced the mutability and uncertainty of terrestrial enjoyments! Riches, on which we set so high a value, frequently make to themselves wings, and, with an eagle's rapid flight, abandon the unfortunate being who flattered himself with the firm expectation of retaining them in peaceable and uninterrupted possession. The transition from the most splendid opulence to want and misery, is often as sudden as the appearance of a thaw after the most intense frost: and daily experience demonstrates that health and life themselves are equally transitory with all other sublunary blessings.

These reflections, however, too seldom occur while we are in possession of earthly prosperity. We resemble those persons who, in a fine winter morning, venture to set out on a journey, without considering the sudden changes of weather so likely to happen at this season. When fortune smiles upon us, and joy and

pleasure surround our habitation, we think we have nothing to fear; and do not consider how suddenly the happiest situation may be changed into misery. And, supposing we have not hitherto had an opportunity of proving this by sad experience, it is certain, at least, that a time will come when we shall be convinced, by ourselves, of the nothingness and frailty of all terrestrial things. To those who are at present in the spring or summer of life, winter will soon come; and they will then feel how transient those enjoyments are on which they have depended with so much confidence; they will learn that all earthly pleasures are like snow, which dazzles the eye indeed, but soon dissolves and is no more.

The instability of the snow may also afford another important reflection, by reminding us of our extreme weakness. Of how little avail would be the utmost efforts of human strength and industry to clear the earth from snow and ice! Yet God effects this change with infinite ease: he commands a southern gale to blow, and a thaw immediately takes place. Now has not this God, who does such great things in nature, the same power in the world of spirits, and in the ordering of our destiny? He has but to speak the word and our troubles cease.

FEBRUARY XIV.

A short History of the Creation.

THERE was a time when our earth and the celestial globes had no existence; but all was a shapeless and confused mass, commonly called a chaos. On the first day of the creation, God gave motion to this mass, and separated the fiery and luminous parts. These particles, separated from other matter, became united, without, however, yet forming particular bodies. God called the light day, and the darkness night. Hitherto the fluid and solid bodies remained mixed together. But now God separated them; collected the waters from our atmosphere; and raised vapours from the earth, which, gradually condensing, became clouds, and formed that lower firmament which we call *sky*. These were the works of the second day.

As the water still covered the face of the earth, God

destined the third day for their separation. Accordingly, they were collected in different reservoirs, whilst the dry land exhibited a picturesque display of mountains, valleys, fields, and forests. Each tree, at this time, also bore its peculiar fruit; and the numerous vegetables which adorn the landscape contained the seeds necessary for their future propagation.

On the fourth day God formed, from that mass of light which he had separated from the darkness, luminous bodies, to distinguish day from night, and to regulate the seasons of the year. Then first appeared the sun, whose benignant heat warms and fertilizes the earth, and whose rays enlighten us during the day. The moon appears to have been formed out of the dark matter of the chaos.

Hitherto God had produced nothing but inanimate creatures upon the earth: but the fifth day was occupied in giving existence to a part of the animals. The waters were, accordingly, replenished with fish of various kinds and sizes, possessing bodies analogous to the element in which they were to live; and the air was peopled with all kinds of fowls, which received an instinct to perpetuate their respective species. Nothing now remained but to cover the earth also with living creatures; and these God created on the sixth day; forming out of the earth a multitude of wild and domestic animals, to serve as well for tillage, as for the food and support of man. Finally, he produced an infinite multitude of insects and reptiles: and all these animals, when created, were in a state of complete perfection. Every thing being thus prepared, the time was come for introducing man into the world, who was to be the lord of all these creatures. God then created the first man; and, as he belonged both to the intellectual and corporeal world, he gave him not only a body formed out of the earth, but also a reasonable soul: after which he formed a woman out of one of his ribs, and presented her to him as his companion. These two beings, by which God terminated his works of the creation, were the most admirable master-pieces of his power and wisdom.

Is it possible to reflect on this history without being struck with admiration and astonishment at the infinite power and wisdom manifested in the works of the crea-

tion? On whatever side we cast our eyes, we discover the Lord God Almighty, to whose immense power nothing is comparable. The heavens declare his glory, and the firmament showeth his handy work. All the creatures are so many proofs of his adorable perfections, and, in some sense or other, seem to bear his image and impression. It is only by considering creatures in this point of view, and drawing this use from the contemplation of them, that we become worthy to inhabit this immense universe. And how can we possibly acknowledge the greatness and glory of God, in the works of creation, without being penetrated with the most lively sentiments of veneration, love, gratitude, and perfect confidence? These are objects worthy of the most profound respect, and warmest affection. God is the fertile source of all that is beautiful and delightful in nature. It is the Lord who is alone worthy of homage, praise, and adoration. This is the employment for which we were created, and to which the whole creation invites us. If we obey our Creator, if we endeavour to conform ourselves to the rules of wisdom and order that he has followed in the formation and arrangement of the universe, it will be the best manner of praising him; and if, full of filial confidence, we trust without fear in his tender mercies, it is the highest mark of respect and veneration he requires of us.

FEBRUARY XV.

Bodily Advantages which the Beasts have over Man.

In carefully examining the bodies of beasts, we discover various advantages which they have over mankind. In the first place, their bodies are incontestably more solid, strong, and durable. Most of them are able, as soon as they come into the world, to use their limbs, to seek their food, and to act conformably to the instinct given them by the Creator. The cruel disorders which so often embitter the existence, and destroy the constitutions of the human race, are unknown to them: and the instinct, sagacity, and address which they exhibit in their motions, and in the use of their senses, are truly wonderful to the sons of men. How delicate is their smell! How subtle and piercing their sight! What a-

gility and swiftness in their motions, whether they fly or run! If we also consider the wonderful organization, the admirable make, the noble and majestic form of some animals, it will be found, that, in regard to the body, we have few prerogatives over them, and that they have even many advantages over us. There are some people who complain of the lot of man, and who are discontented, because God has not given him the swiftness of birds, the strength of the horse, the distinguishing smell of the dog, the piercing sight of the eagle, and the fleetness of the stag. Such complaints, however, merely result from ignorance and stupidity: for all who are enabled to appreciate the possession of a *rational soul*, must be fully convinced of the immense advantages we have over the brute creation, notwithstanding their surprising agility and address. Why has the Creator given them certain prerogatives peculiar to their bodies? why has he endowed them with such great strength, senses so exquisite, so much lightness and address in their motions? why has he impressed upon them such wonderful instinct, and so much sagacity for obtaining their food? It could only be to make them in some measure amends for the want of reason, and other faculties of the human mind, with which we are blessed. By the use of our understanding, we can preserve ourselves from many maladies, and guard against many dangers. We may, by observing rules, or having recourse to medicine, cure our disorders and infirmities, or, at least, relieve them. Our intellectual faculties enable us to procure and enjoy a thousand conveniences; and a social intercourse with our fellow-mortals is equally conducive to our welfare and happiness. Brutes are deprived of all these advantages, by not having received the inestimable gift of reason: and their situation might probably have been miserable, had not the Creator ordained something to compensate to them for the want of understanding. On this account he has, in some respects, been more liberal towards them than towards us in the distribution of corporeal advantages. In addition to a construction, form, and senses adapted to their wants, he has given them a variety of instincts, industry, and an admirable sagacity, by which they can distinguish between noxious and salutary food, procure their own nourishment, and provide for their various

necessities:—advantages which we have not in an equal degree, and without which we should remain perfectly satisfied, while recollecting that we have received privileges of incomparably greater value.

Here we ought again to admire the paternal care of a gracious Providence towards men. It is for us, that God has formed the brutes with such wonderful art: it is in order to be of more essential service to us, that they are endowed with so much strength, agility, and industry; with bodies so robust, and senses so exquisite. We should soon be liable to all sorts of inconveniences; we should be deprived of a number of great advantages, in regard to our support and our occupations; if the animals, whose daily service is so necessary to us, had fewer bodily perfections. Let us consider, also, that the advantages which the brutes enjoy are limited to the present world; whereas we are created for a better, where our bodies, raised to the highest degree of glory and perfection, will be freed from all the defects and all the wants they are subject to upon earth.

FEBRUARY XVI.

The Moon.

The moon, next to the sun, is, of all the celestial bodies, that which has the most salutary influence upon our globe; and, if it were not in itself an object worthy our attention, it would become so at least by the great advantages we derive from it. Even with the naked eye, and without a telescope, we can discover several phenomena in the moon. It is a round opaque body, which borrows its light from the sun, and is apparent to every part of the earth in twenty-four hours (as the earth moves round its axis), and completes its own revolution in about twenty-nine days and a half. But what the naked eye may observe in the moon, is not to be compared to what we discover by the assistance of telescopes and calculations. How much are we obliged to those enlightened men, who, to extend our knowledge, and to render the glory of our Creator more manifest to the eyes of mankind, have made inquiries and discoveries which enable us to form the highest notions of the celestial bodies! By means of

their laborious observations, we know that the moon, which appears so small to the naked eye, is, however, a body of considerable magnitude, with relation to the earth. Its diameter is two thousand one hundred and eighty miles; its proportional size as one is to forty-eight; and, though the moon is nearer to us than any other planet, it is two hundred and forty thousand miles distant from this earth. There are several spots in the moon visible to the naked eye. Some of these are pale and dark; others are more or less luminous, according to the light they reflect. The bright spots are probably high mountains, which reflect the light of the sun from their lofty summits; and the dark spots are either deep valleys, or fluid transparent bodies, such as seas, which, conformably to their nature, absorb a great deal of light, and reflect very little back.

These discoveries, to which no solid objection can be made, prove that the moon is not so inconsiderable a body as ignorant people imagine. The size, the distance, and all that we know of it, gives us, on the contrary, a new proof of the unlimited power and wisdom of our Creator. But can this vast planet be merely designed to illumine our globe during the night? This body which, in many respects, resembles our earth, and seems calculated for the same ends, can it be created merely to produce the ebbing and flowing of the sea, and some other advantages which we derive from it? Is it probable that a surface of some hundreds of thousands of square miles should be entirely destitute of living creatures. Would it not be inconsistent with the Divine wisdom and goodness to leave such an immense space empty and desert? Let us rather believe that God has established his empire in the moon, as well as among us. Without doubt, there are innumerable creatures upon it, who adore with us the same Lord and Father; who are, like us, the objects of his providential care; and for whose happiness God provides with the same goodness as he does for ours. But as our knowledge in this respect is still very imperfect, let us confine ourselves to the advantages which accrue to us from the moon. The tender mercy of Providence towards man manifests itself very sensibly in this case. He placed the moon so near us, that she alone might shed more light upon our earth, than all the fixed stars

together: and by this means he has not only afforded us an agreeable object, but a thousand conveniences and advantages; since, by moon-light, we can undertake journeys wherever occasion calls us, prolong our work, and dispatch much business even during the night. Besides, in what disorder and confusion should we be, in regard to the division of time, were it not for the regularity with which the changes of the moon succeed each other. It is true, that the calculations of astronomers save us the trouble, on that account, of observing the variations of that planet. But all the use of almanacks is owing to the observations made on the course of the moon.

Almighty God! I desire to adore thy wisdom and goodness in the light of the moon as in that of the sun. The more seriously I contemplate thy works in the firmament, the more is my soul impressed with exalted ideas of thy grandeur and thy glory, O! that, soaring above all terrestrial objects, I may be enabled to raise the eyes of my understanding to thee, who hast created all these globes, and arranged them for the benefit of man. When I behold the moon and the stars illuminating the long nights of winter, may I muse upon the immense extent of thy empire, and, in the spirit of unfeigned devotion, aspire to those blissful regions, where I hope hereafter to contemplate the wonders of thy power, and the glories of thy grace.

FEBRUARY XVII.

The Rain waters and fertilizes the Earth.

The fertility of the earth depends chiefly on the moisture it receives from rain and other aqueous vapours. If the watering of the fields were left to human industry, it would be an endless trouble; and, notwithstanding every effort, drought and famine would soon destroy us. In vain would mankind use all their power: it would not be sufficient to water what they had sown and planted. They might drain the pumps and the rivers, without giving water enough to the vegetables to keep them from withering and dying. How necessary, therefore, was it, that the vapours should be collected into clouds, as in reservoirs, and fall afterwards, by the assistance of the winds, upon the earth, to refresh the trees and

plants! Every shower of rain enriches the earth, which would otherwise have a sad and languishing appearance. The treasures which its surface so liberally bestows upon us, are infinitely more valuable than all the metals and precious stones contained in its bowels. Society might subsist very well without gold or silver, but not without corn, vegetables, and pasture.

Let us here reflect on the inexpressible blessings which rain produces on our globe. A seasonable shower renews the face of the earth, and has much more effect than the dew, which, in the night-time, moistens the grass and the leaves. The furrowed fields drink with avidity the beneficent rains poured upon them. The principles of fertility unfold themselves in the seeds, and second the labour of man. The husbandman ploughs, sows, and plants; and God gives the increase. Men do what is in their power; and, whatever is beyond their ability, the Lord himself performs. In winter he covers the seeds as with a garment; in summer he warms and refreshes them by the rays of the sun, and by timely showers. He crowns the year with his goodness, and grants his blessings so successively, that mankind are not merely nourished, but their hearts are filled with joy and gladness. Nor is the Divine blessing confined to cultivated lands: it extends also to the fields and pastures of the desert. Even those countries which are forsaken by man, and from which our fellow-creatures derive no direct advantage, are objects of providential care. And such is the goodness of God, that the hills and valleys rejoice together, and are adorned with smiling verdure: the showers do not fall upon them without effect; for, if they do not produce fruit for our support, they are, at least, immense reservoirs of water for our earth; and they produce a great variety of wholesome plants and simples conducive to the health of man, and serviceable as food for animals.

Let us never forget the provident goodness of our heavenly Father. How often, in this month particularly, is the earth watered with rain; but how seldom do we reflect as we ought upon this blessing! Let us learn to reflect on its real value, and consider how gloomy, barren, and desert, all nature would be, if the sky were to us like brass, and the earth as iron: all the plants and trees would perish; every living creature would

faint: the rivers would be dried up: and we should inhale death from the surrounding atmosphere. As often as the showers water the earth, we receive fresh proofs of Divine favor: yet when the winter rains are heavy and of long duration, we are apt to complain and murmur, and sometimes presume to arraign the government of the Most High! Rather let us bless and admire the goodness of Him by whose command the seasons are renewed, and follow each other in regular succession: who, for our sakes, causes the rain to fertilize the earth; who opens his liberal hand to do good to our needy race; and whose blessings fill our land with happiness and plenty. Let us adore the beneficent Creator, and sing, to his honor, hymns of praise and thanksgiving. What has he not already done for us!—and what may we not still expect from his goodness!

FEBRUARY XVIII.

Emblems of Death presented to our Notice in Winter.

We continually require warnings to induce us to meditate upon the end of our days. We are naturally inclined to avert our eyes from the prospect of approaching dissolution: and, if it were otherwise, the avocations and pleasures of life scarcely allow time for such reflections as this important subject demands. It is, however, necessary, for our repose and safety, that we should think frequently of this great event, in order to lessen our fears of it. Let us, therefore, take advantage of the present season for that purpose, and consider, as emblems of death, some of the objects which are daily presented to our view. Nature is now deprived of the beauty and charms with which it was adorned in summer: the fields and gardens, where we walked with so much pleasure, are useless, deserted, and altogether uninviting; and the days are too short and disagreeable to make us wish to pass them in the country. Is not this a lively image of our state, when arrived at the winter of our days? All the charms we are so vain of in the spring or summer of life, disappear: the vexations, peevishness, and infirmities of age, no longer permit us to enjoy or relish the amusements of youth; and few young people find pleasure in our company: the short and gloomy days of age are a burden to us;

and, if we are reasonable, our wishes tend towards a better life. As the days, at this season, possess so few charms, we have no right to complain of their shortness: and when we contemplate human life as a continual struggle with sin and misery, we should bless the wisdom which has confined it within such narrow limits. The path that leads to heaven is narrow and full of thorns: should we not adore our God for making it so short? Several kinds of animals pass the winter in a profound sleep, from which they do not awake till they feel the mild and enlivening warmth of spring; so will our lifeless bodies rest in the grave, till the day of judgment shall awaken us from the sleep of death.

In winter, the night steals upon us unexpectedly, and interrupts us in the midst of our occupations. Thus the night of death may probably overtake us when we least expect it In the midst of projects for the future; in the midst of our grandest designs and most important enterprises, death may suddenly surprise us. God grant we may be found occupied in such concerns as may conduce to our eternal felicity! The most melancholy circumstance of the winter nights is certainly their length, which deprives us so long of the sun; and, perhaps, one reason for dreading death, is the thought of lying so long in the grave. But, as the winter nights glide imperceptibly away in a sweet sleep, so will death insensibly pass by, and we shall assuredly arise in the broad light of the new creation. These are the edifying and useful reflections with which winter presents us. Let us not be afraid to contemplate these images of mortality; but rather let us endeavour to profit by them. Let the thought of our latter end be familiar to us, in every situation of life: then shall we think of death without fear: it will be a comfort to us in affliction, a friend and faithful counsellor in prosperity, and a shield against the fiery darts of temptation.

FEBRUARY XIX.

Means to procure Fire.

In these long winter nights, and during the severe cold weather, fire is a blessing, for which we cannot be too grateful. How wretched and miserable would our lives be at this season, if God had not given to fire the pro-

perty of enlightening and warming our houses; and if this element were not abundantly diffused through all nature! It is contained in sulphur, in animal fat, in oil, in bees' wax, in bitumens, and in all vegetables; although it appear inactive, and its effects are not externally perceptible. But the collision of bodies discovers its presence, and demonstrates that fire must be diffused through every part of the atmosphere, as may be perceived between the points which come into contact. By the quick and repeated friction of hard bodies, such as steel and flint, the fire contained in them is put in motion; and the particles which fly out of the bodies, and are violently agitated against each other, acquire force capable of inflaming any thing. This is the common method of obtaining fire for our domestic uses. But we are generally content with enjoying the continual service this element renders us, in the preparation of our food, in warming us, and in lighting our apartments, without being at the trouble to inquire how fire is produced. If we were more attentive to the causes of certain natural phenomena, we should every where find traces of infinite goodness and wisdom. Certainly it does not require much reflection to discover them in this instance. It is with a beneficent view that God has spread fire all around us, and throughout all nature, in order to be at hand for every necessary purpose, and that it might be enjoyed on all occasions. This matter assumes every kind of form for our use; and, by uniting with many other bodies, it procures us the most essential advantages. How happy should we be if we only accustomed ourselves to be more observant of the benefits we daily receive from the liberal hand of God! But, alas! it is their constant and daily recurrence which renders us careless and indifferent respecting them. These proofs, however, which we daily receive of God's goodness, are what we can the least dispense with; and, from that single circumstance, they merit our particular acknowledgement. Let us, then, often think of our wise and merciful Preserver; and, in enjoying his blessings, even those which appear the most inconsiderable, let us accustom ourselves to raise our hearts to him, and to honour him as the source of all good.

FEBRUARY XX.

The Equal Distribution of the Seasons.

When the sun appears remote from us, and the severe cold binds and shuts up our fields; there are some countries where the inhabitants enjoy all the beauties of spring; others, where they are gathering rich harvests; and others, where autumn fills their granaries with delicious fruit. It is in this manner that Divine wisdom has regulated the change of seasons, and distributed the same favor to all his creatures at different times. His impartial love extends itself to all the beings he has made, without respect to rank, nation, or merit. It is sufficient that they require his blessing, for him to take pleasure in bestowing it. His beneficent views extend over the deserts of Arabia with as much goodness as over the smiling countries of Europe; and his government is the same from pole to pole.

But it may be asked, if God distribute the pleasures of this life equally, why are some countries deprived of the pleasures of spring, while we enjoy them in such abundance? why are the rays of the sun so partially diffused, that in some climates there is darkness, and in others light, for whole months together? why are not the frozen countries, near the pole, as beautiful and fertile as our plains and valleys? Who art thou, O man, who darest to propose such questions? what right hast thou to demand an account of an infinitely wise Being, for the manner in which he rules the world? Vain mortal! learn to be humble, and to acknowledge traces of sovereign wisdom in the very things wherein thy weak understanding imagined there were defects. Perhaps thou supposest Providence has refused, to certain parts of the earth, advantages and happiness which have been lavished with profusion elsewhere. Not so: God has given to each country what was necessary to the life and welfare of his creatures; all is planned according to the climate in which they live; and Providence has every where provided for their preservation and support. The hours of the day vary in different parts of the world, according to certain rules; but all the zones have nearly the same number. There is scarcely any inhabited country which the sun shines

more upon than another; all the difference is, that they enjoy his presence at different times. With the inhabitants of the torrid zone the days and nights are always of equal length; while the neighbouring zones possess this equality twice a year. It is true, that the sun quits them alternately, and gives summer to one side of the earth, while he abandons the other to winter; but he never fails to return regularly, from one of the limits of his annual course to the other; and if the winter days are shorter than the nights, summer makes ample amends in that respect. Even the inhabitants of the frigid zone, who are deprived of the light of the sun for several months, see it afterwards on their horizon several following months; and, though they have some hours less of day-light, they are made amends for it by long twilights.

O Lord! the earth is full of thy mercies! Thy goodness is diffused over all the heavens, and extends to the very clouds. What country is there, in the whole universe, which has not experienced the effect of thy goodness? what province, throughout thy immense empire, is there, in which there may not be seen traces of thy beneficence? where is the creature, where is the man, who, at each season, cannot see and feel how good thou art? I rejoice at living under thy merciful government: I rejoice in the numberless blessings which thou scatterest over all the earth, for the happiness of thy creatures. How is it possible I should not wish that all my fellow-mortals throughout the world, may be as happy, as tranquil, and content, as I am? Yes, thou knowest; thou O God! who seest my heart, thou knowest that I am neither covetous nor selfish enough to behold with regret the happiness of others, or to wish their welfare inferior to my own! O God of mercy, grant that I may become more and more like thee. As thou lovest all thy creatures, and as, without respect to persons, thou doest to each all the good it is capable of enjoying, be pleased to kindle in my heart the same universal love toward my fellow-creatures, that I may do them all the good in my power; and, at least, that I may send up to thee my ardent prayers for the happiness of all mankind.

FEBRUARY XXI.

The Utility of our Senses.

I HAVE senses; that is to say, I am a being, who, by means of several wonderful organs of my body, can procure myself a variety of sensations. By my eyes I can acquire the perception of light and colours; by my ears, that of different sounds; by my smell and taste, that of agreeable or disagreeable emanations, of savours and odours, of sweet and bitter, and other similar properties of the bodies I make use of: and, lastly, by my feeling, I have the perception of heat and cold, hardness and softness, siccity and moisture, &c.

How wretched should I be were I deprived of the organs of sight, hearing, tasting, smelling, and feeling! If I had not *sight*, how could I escape that multitude of dangers which surround me, or form to myself any idea of the magnificence of the heavens, the beauty of the country, and all the agreeable objects with which the earth is filled? Without the faculty of *hearing*, how could I perceive the dangers which threaten me at a distance? how could I communicate my thoughts to others? or how enjoy the harmony and fascinating charms of music? and how, during my juvenile years, could I have learnt languages, obtained the talent of reading, and many other faculties, which distinguish me so advantageously from the brute creation? Had I not been furnished with the organs of *tasting* and *smelling*, how could I have distinguished, in my food, what was wholesome or injurious? or how enjoyed the aromatic perfumes of spring, and a thousand objects which now afford the most pleasing sensations? Finally, without the sense of *feeling*, how could I have discovered, either when sleeping or awake, what might prove injurious to me? or how could I have taken measures for my own preservation? I cannot therefore be too thankful, that I can see, hear, feel, and speak. I adore my merciful Creator, and desire to acknowledge and celebrate his bounty. My mouth shall glorify him in songs of praise and thanksgiving; and my ears shall be attentive to the universal hymn which all nature chants to his honor. O may I never be insensible to the value of my senses, nor make an improper use of

them! Thou, my Creator, hast given them to me for the noblest purposes. How unworthy should I be of thy boundless goodness, and of the admirable formation of my body, if I only employed my senses in brutal enjoyments, without proposing to myself any higher views! How wretched should I be, if I only sought my happiness in sensuality, and preferred it to the more sublime gratifications of the mind! for there will come a time, when my eyes will no longer be affected by external objects; when the harmonious sounds of music will no longer please my ear; nor the most exquisite dainties, or delicious wines, regale my palate. A time will come, when my senses will take no pleasure or satisfaction in any earthly thing. How wretched should I then be, if I knew nothing that could nourish my mind or comfort my soul! Divine Spirit, direct and lead me so to make use of my senses, that I may never lose sight of the great purpose of my existence. In the use of these organs may I habituate myself to those occupations in which I hope to be employed in the kingdom of heaven.

At this moment, while I enjoy and acknowledge the perfect use of all my senses, it becomes me to reflect on those who are either wholly or partially deprived of some of these blessings. O ye blind, ye deaf, ye dumb! it is impossible to muse upon your condition without sentiments of commiseration for you, and of gratitude for my own happiness. O God! how can I sufficiently express my sense of thy goodness, when I compare my lot with that of these unhappy people? Pity those, O Lord! who are afflicted through the deficiency of their organs; compensate their imperfections by other advantages; and enable them, by faith in thy dear Son, to anticipate a fulness of joy at thy right hand.

FEBRUARY XXII.

Elevation of the Soul to God.

When I am enabled to elevate my soul to God, I begin to answer the end for which I was placed in this world, and enjoy an antepast of that felicity which awaits me in the celestial regions. How trifling and contemptible do the vain amusements of the age appear, when my heart accustoms itself to seek its felicity in the Creator, and how am I humbled in my own

eyes when I compare my meanness and obscurity with the infinite majesty of heaven! How is my natural pride mortified when I seem to lose myself in the ocean of Divine perfections; and what ardent desires are kindled in my breast for the arrival of that blessed day when I shall be eternally united to the Supreme Being! But am I sufficiently sensible of the inestimable advantage of reflecting often on God, to induce me to form the resolution of doing it as I ought? Alas! instead of filling my mind with this great and sublime object, I too often fix my thoughts on earthly and perishable things: instead of finding delight in meditating on my Creator, I take pleasure in nothing but what flatters my senses: instead of admiring that Being in whom is centred all that can be conceived lovely, and who alone can make me perfectly blessed, I fix my heart on the world, and passionately love those objects which cannot ensure my happiness, and which I cannot long enjoy. May my past experience teach me wisdom hereafter! Hitherto I have only loved temporal blessings, and have wholly given up myself to them: I have sought my peace and happiness in things even more frail and perishable than myself. But, through the grace of God, my eyes are now opened—I contemplate a Being, the centre of all perfection, who has made me out of nothing, and given me a soul, whose desires can only be satisfied with infinite blessings. To that Being I consecrate my heart, devoting myself entirely, and for ever, to him. In him alone will I hereafter seek my joy and comfort. Those earthly enjoyments, which I have hitherto imprudently preferred to heavenly blessings, I will exchange for more real and solid advantages. I will make use of the first as it is the will of my Creator; but it shall never be in preference to the will of God: on the contrary, every creature affords me an opportunity to raise my thoughts to the Creator, and excites me to bless the goodness of him who has given to earthly things the power to cheer my soul. If pleasures, enjoyed only by means of a frail and perishable body, can affect me so sensibly, how superior must be the delights of a future happy state, disencumbered from this earthly tabernacle! What ineffable sensations shall I experience, when my soul, freed from its fetters, will be able to contemplate, at liberty, the face of the

Lord! If a single ray of light be so enlivening, what will the sun itself be! If, even in this world, God is so admirable in his works, what will he be in the mansions of eternal glory!

O how my soul pants to enjoy this felicity in the presence of the Almighty! Fly swiftly round ye hours and days of darkness which I must pass below, and let that blessed moment appear, when, freed from the burden of this gross body, my spirit shall ascend above the starry heavens, to obtain a more perfect knowledge of my God, and to offer my adorations at the footstool of his throne!

FEBRUARY XXIII.

Causes of Heat and Cold.

WHENCE proceeds the transition from excessive heat to intense cold? or by what means does nature effect these revolutions? The temperature of the atmosphere during winter, depends on the situation of the sun: for, when our globe in its annual course round that luminary, is so placed, that its northern hemisphere is turned from it, or that the rays fall obliquely upon those parts, and when the sun is but a few hours above our horizon, it is impossible that any considerable degree of warmth should be produced. The heat, however, does not depend entirely on the situation or distance of the sun; for, although that luminary passes annually through the same constellations, and is not farther from us one year than another, the degrees of cold in our winters are very different: some winters are as mild as autumn, and in others deep seas are frozen, and men and animals can scarcely protect themselves from the severity of the cold. Even in the countries where, most of the year, the days and nights are of equal length, the power of the sun is too weak to melt the ice on the tops of the mountains: the severest winter reigns at their summit, and the hottest summer in the valleys, though the same rays fall equally on both places. If the sun were the only cause of heat and cold, these phenomena would be inexplicable.

Nature is rich in means; and a thousand causes, unknown to us, may probably second her operations. But we know, at least, that the nature of the air and

the winds have great influence in regard to the heat and cold of a country. Hence it often happens to be cold in the longest days of summer, when the atmosphere is loaded with vapours, and the sky has been long darkened with clouds, or when the north wind blows strongly. Hence also, even in winter, the cold is not severe when the southerly winds bring us warm air. The soil of a country contributes essentially to the temperature of its atmosphere. For instance, in Siberia, where the earth abounds with nitre and other salts, it is always colder than in countries nearer to the pole, and where the rays of the sun fall more obliquely. It may be added, that the natural and internal warmth of the earth cause a considerable variation in the temperature of different countries.

These causes, and, perhaps, many others unknown to us, occasion the vicissitudes of heat and cold upon the earth. But who can discover all the springs of the great machine of the universe, or explain their different effects? Most of the phenomena puzzle and confound us, and we are obliged to confess, that all the sagacity of the greatest philosophers is incapable of penetrating into the depths of nature. We see but a part, and, undoubtedly, the smallest part, of her operations; and, certainly, it is for very wise reasons, that the Creator has concealed from us the causes of so many effects which we see in the course of nature, and of providence. He designs by this to teach us to look into ourselves. Of what utility, indeed, would the most perfect knowledge of nature be to us, if we neglected to rectify, and become acquainted with, our own hearts? We know enough of nature to teach us wisdom and contentment; perhaps a more perfect acquaintance with her mysteries might inflate our minds, disturb our repose, and cause us to forget our Creator. Let us therefore endeavour to make a good use of the little we know, by becoming better, and thus glorifying the Supreme Being. If, after all our inquiries and reflections, many things still remain concealed, let us draw this natural conclusion—that the wisdom of God surpasses all our conceptions: that it is infinite; and that our understandings are limited. Thus, under a due conviction of our weakness and incapacity, we shall feel it our greatest duty to humble ourselves, and adore the most high God.

FEBRUARY XXIV.

Singularities in the Kingdom of Minerals.

It would be difficult, if not impossible, for our weak and limited understandings to take in at once the whole kingdom of nature, and to learn, altogether, the wonderful properties of things. We shall more easily acquire this knowledge by beginning with certain detached objects, some particular beauties, and occupying our attention, at first, with the most striking phenomena. Let us then, at present, reflect on some curiosities among minerals, and we shall discover among them, as every where else, proofs of the infinite wisdom of God. Among these there are few more worthy our attention than the *loadstone*. When suspended, it turns itself constantly—one end towards the north, and the other towards the south; and it is in those two ends or poles that it has the strongest power of attraction. It is also remarkable, that it attracts nothing but iron; and that, if two loadstones are put together, their opposite poles, viz. the southern and northern, attract one another; whereas the poles of the same name, viz. the two southern, or the two northern, invariably repel each other.

There are properties found in *quicksilver* equally wonderful: it takes every form one wishes to give it; but it always ends by reassuming its own natural form. In the fire, it rises into vapour; and when shaken a long time, it changes into dust: by being dissolved, it becomes a hard and transparent crystal; but it can always be restored to its former state of fluidity. *Gold* is the first and most valuable of metals, not only from its scarcity, but on account of its wonderful properties. It is the heaviest and most unalterable of all bodies; so that it can stand the action of the hottest fire for two months together, without sustaining any sensible diminution of its weight. Its parts are so fine, that one grain of beaten gold can cover fifty square inches, in such a manner, that the naked eye may distinguish, on the two surfaces, four millions of particles; and its ductility is such, that a single grain may be drawn out into a thread five hundred feet long.

The wonderful form of *common salt*, *brilliant stones*, *singular figures of earth*, where metals are concealed,

petrified bodies that are often found on high mountains some hundred miles from the sea, which is their original source,—and a hundred other singularities in the mineral world, seem formed to awaken our curiosity.

No employment whatever has more charms, is more satisfactory, or has more variety in it, than an attentive observation of nature. Supposing we were to live ages on the earth, and that we were to employ every day, and every hour, in studying only the singularities amongst minerals; at the end of that time, a thousand would remain undiscovered and unexplained, and would, more and more, excite our curiosity. But as the duration of human life scarcely extends to half a century, let us make good use of the little time granted us; and let us devote it, as much as our first duties will permit, to the contemplation of nature, and thus enjoy the most innocent and lasting pleasures of the mind. The satisfaction we shall find in it will increase more and more, in proportion as we reflect more attentively on the views God has proposed to himself in his works; for the wonders of nature are infinitely and admirably more sublime, than all the productions of human art. The latter do not always promote our welfare, or make us better, but are often mere objects of fruitless admiration. But all the works of nature, and even the most singular, tend to the universal good of the world. They exist, not only to be seen, but also to be enjoyed; and all, without exception, proclaim the goodness, as well as the wisdom, of God.

FEBRUARY XXV.

Daily Proofs experienced of Divine Providence.

SHALL we attempt to enumerate all the blessings which the mercy of God has heaped upon us, from the first moment of our existence to the present time? As well might we expect to count the stars as to reckon the blessings we have received, even in a *single year*. How then can we hope to enumerate those which have descended upon our heads, in the course, perhaps, of a long life? What mercies received during our infancy, though now forgotten!—nights passed quietly in a sound sleep; food that nourished and strengthened our bodies; and deliverances from many visible and invisible dan-

gers. How often has God provided for our necessities, and confounded our incredulity, when we thought it impossible! Nothing has happened to us unnoticed by the eye of Heaven. Every day of our lives has augmented the sum of God's mercies; his goodness toward us is renewed each time that the rising or the setting sun illumines our horizon; and who knows how often Divine Providence has interfered to shield us from dangers of which we had no conception? What shall we then say of the blessings of the Lord, in having redeemed us, through Jesus Christ? and in having given us the Gospel, to teach us the way of salvation?

What a mercy that we were not born in the dark regions of Pagan superstition, but in the glorious light of Christianity; and that the Deity himself continually labours to sanctify our hearts and to perfect us in love! Are not these indisputable proofs of his goodness and his tender compassion?

Allowing that it is impracticable to calculate the immensity of blessings which we receive from God during our sublunary existence, let us limit ourselves to a *single day*, and endeavour to sum up the mercies which even that point of time brings with it. Among these we must enumerate light, air, food, strength to labour, the dwelling we inhabit, the relations on whom our happiness depends, and the numerous and varied pleasures of life. Let us also muse on the blessing of *respiration*, nor erroneously conceive it a matter of small importance. We respire, at least, twelve times every minute: consequently each minute brings twelve blessings indispensably necessary for the preservation of our lives. With respiration, also, God graciously preserves our understanding, will, and the use of our several members. Physicians compute that there are six thousand parts in our bodies, which, of course are supported by Divine power; and supposing that each minute the soul performs only thirty operations, what wonders of preservation burst upon our astonished view! According to this computation, we receive, every minute, from our Creator, twelve blessings relative to respiration; thirty relative to our understanding and will; and six thousand relative to the different parts of our bodies: consequently God bestows upon us, each minute, six thousand and forty-two blessings, which amount to three

hundred and sixty-two thousand five hundred and twenty every hour of our lives!

O may these daily proofs of the providence and goodness of God make the strongest and most lasting impressions on our hearts: and this will undoubtedly be the case, if our souls be susceptible of any emotions of gratitude. If we have any sense of the greatness of God's mercy and our own unworthiness, it is impossible we should not feel the highest gratitude towards the Preserver of our lives. But, in order to maintain in our hearts a lively remembrance of God's blessings, let us frequently compute them. The more we think of them, the more we shall be disposed to magnify the Lord our God, and the more delighted we shall be in celebrating his praise.

FEBRUARY XXVI.

Tranquillity of the Night.

It is impossible to reflect without admiration and gratitude on the tender care of Providence, in securing our repose during the absence of the day. At the approach of night, a calm and solemn stillness is diffused over all nature, which announces a suspension of labour, and invites to the refreshment of sleep. The birds retire to their nests, the flocks lie down in their folds, and horses, oxen, and other domestic animals, whose activity might disturb us, sleep securely around our dwellings, while nature, in behalf of man, suspends noise, dazzling light, and all such impressions as might keep the senses in action. But this tranquillity, in the night, is not equally agreeable to every body. Many, who, from pain, sickness, and other accidents, pass restless nights, wish this melancholy silence interrupted. Their sufferings and uneasiness seem to increase, while others are asleep around them: they reckon the hours, and impatiently wish for day, in the hope that society will afford them some relief. Many wicked people, also, who pass the day in continual riot and dissipation, find the tranquillity of the night painful and troublesome: it awakens their conscience; and the least noise terrifies them.

I bless thee, O God, for making the repose of night so agreeable and refreshing! The health and peace of

mind I enjoy, procure me the sweetest sleep. When I have gone through the labours of the day, the approach of night makes me adore thy goodness, which has disposed all things so happily to procure me a quiet repose. I lie down with tranquillity, while wicked men and robbers walk in the dark paths of rapine and injustice. I enjoy a balmy slumber, while many sick people, stretched on a bed of pain and misery, would consider the smallest rest as a blessing, and cannot obtain it;—while the intemperate man is still loading himself with meat and drink: while the miser is tormenting himself with sordid care, and with the fear of one day wanting the necessaries of life; and while the discontented and ambitious man revolves in his mind the most distant plans of future elevation and greatness.

But how often does man interrupt the tranquillity of night by levity or wickedness! The boisterous noise of drunkards, and the wild spirit of libertines, often disturb the repose of others, and deprive them of the blessings of sleep. Ought we not to respect the order God has so wisely established in nature, too much to disturb it in the levity of our hearts? Ought not love to our fellow-creatures to prevent us from disturbing their sleep, and, by that means, perhaps, hurting both health and life? Alas! this ill-timed noise may in one place, disturb a dying person; in another, alarm a woman in labour, or terrify a mother suckling her child.

The repose I hope for in the grave, will be very different: there I shall sleep in peace, and shall not be awakened till the voice of my Judge shall call me back to life. How happy are the faithful whom death has conducted to God! They are released from all the miseries to which we are subject in this world. Here the very happiest life is passed in alternate hopes and fears, and our repose is disturbed by numberless troubles and anxieties: the righteous, on the contrary, whose bodies rest quietly in the grave, are free from all misery; and never more will cares, sorrow, or pain, imbitter their felicity.

FEBRUARY XXVII.

Winter is the Image of our Life.

In these winter days there are continual changes—flakes of snow and showers of rain, storms and calms, cloudy

days and serene skies, succeed each other. The snow has scarcely covered the earth with a mantle of dazzling whiteness, when the rain comes to destroy it; and the sun has no sooner displayed his animating beams, than he recedes from our view. Similar vicissitudes are observable in the moral world; and the dark, tedious, and gloomy days of winter are strikingly emblematic of many scenes in human life. But as storms and darkness are necessary, and conformable to the wise laws of nature, so are the disagreeable accidents and adversities which we sometimes experience in the world. Who can prevent the day from being obscured by dark clouds? or our happiness from being disturbed, sometimes by man, and sometimes by accidents? How is it possible the sky should be always calm and serene? or that our minds should enjoy uninterrupted repose? The present constitution of our nature will as little admit of our being always free from pain and disagreeable sensations, as the constitution of the corporeal world would admit of the atmosphere never being loaded with clouds.—Passions, which sometimes produce good, but often also bad effects, are exactly in the moral world what storms are in nature; and as winter and frost are sources of fertility, so are afflictions and sufferings the means to attain wisdom and virtue. Darkness teaches us the value of light. A continual light would dazzle and fatigue our eyes. A serene day never gives us so much pleasure as when it has been preceded by dark and cloudy weather. In the same manner, we should be less sensible of the blessing of health, were we not taught to appreciate it by the painful effects of sickness. The excellence and advantage of friendship would touch us less sensibly, if we did not sometimes meet with faithless friends. After all, it is certain, that we are too much inclined to exaggerate our evils. The events and accidents which happen to us, are seldom as melancholy as we imagine. Self-love, pride, and excess of delicacy, blind us to such a degree, that we consider all unpleasant occurrences as real and great evils; while, on the contrary, we take no notice of our real advantages, and the sweets which attend us through life. It is at least certain, that all our troubles ought to be reckoned as nothing, in comparison of the multitude of blessings and pleasures that are bestowed upon us by

Divine Providence. Those very evils, of which we complain, will prove real, though disguised, blessings, if we know how to make a wise use of them; just as the snow, the frost, the tempest, and other variations of the present season, are means which God makes use of to grant us new favours. Though the skies be, for a long time, dark and stormy, the clouds must finally disperse, and the cheering beams of the sun will reanimate the face of nature: and it may also be remarked, that the heavier the showers are, the sooner the clouds are drained; and the darker they are, the sooner are they dissipated by the solar rays. Misfortunes fill up but a short space of our lives; and when they appear to us the heaviest, when we seem sinking under them, it is a proof that they are soon to end.

I will accept, then, without murmuring, the portion of evil it has pleased the Almighty to allot me. I should be unreasonable to expect nothing but pleasures and days of happiness. No, my God, let rain and sunshine, darkness and light, succeed alternately through the course of my life: I hope to be perfectly resigned! If thou thinkest proper to rouse and shake my soul by the storms of adversity, thy will be done! What matter whether the cup that is given me be more or less bitter, that my troubles be more or less durable, while I am on this side the grave? I know in whom I have believed: I know, O my God, that thou wilt one day grant me eternal salvation! Those who sow in tears, shall hereafter reap in joy. When the short miseries of life are over, I shall see how advantageous they have been; and I shall bless God for having conducted me to heaven through paths of sorrow and tribulation.

These reflections will support me in every misfortune. As the expectation of spring makes the gloomy appearance of winter supportable, so does the sweet hope of futurity encourage me to bear, with resignation and fortitude, the present miseries. Through the darkness of this life, the delightful prospect of a happy hereafter opens to my view. What I already discover of eternity sheds some rays of light on the path in which I walk; and by this way I shall imperceptibly arrive at the blessed regions of peace, light, and happiness.

FEBRUARY XXVIII.

The Utility of Mountains.

Would it not be more advantageous to our globe, if its surface were not so uneven, and if it were not disfigured by so many mountains? I have sometimes thought, that our sight would extend farther, that we should travel more conveniently, and that we should enjoy many other advantages, if the earth were only a vast plain.—But, perhaps, I am mistaken in this opinion. I wish, then, to inquire into the utility of mountains, in order to see whether I have any reason to be discontented with the present arrangement of our globe.

It is evident, that from the mountains and hills those springs flow, which are produced either by heavy snows or by the clouds with which those heights are always covered: and these springs are known to keep up the course of our brooks and rivers. Those chains of high mountains which extend from east to west, and which traverse a great tract of country, serve to hinder the dispersion of vapours, and to condense them into waters. They may therefore be considered as so many stills, which prepare and render the water sweet for the use of man and beast. Their declivities give a moderate fall to the springs, which, flowing thence, render the neighbouring valleys fertile and irriguous. They also afford habitations to a variety of animals, whose flesh and skins are very profitable to us, and which are there supported and nourished without our labour or expense. The sides of the mountains are clothed with trees, plants, and an innumerable quantity of salutary herbs and roots, which are not cultivated with equal success in the plains; and in their bowels metals and minerals form themselves, which would not propagate so well in low and level countries, for want of necessary moisture. Mountains serve also to shelter us from the cold and piercing blasts of the north and east winds.—They are the fosterers of the most exquisite vines; and their bosoms contain precious stones. They are, in a manner, the bulwarks of nature, to guard countries from the fury of seas and tempests; and, like ramparts and natural fortifications, they defend several states from the invasion of enemies, and the ambition of conquerers.

Perhaps, too, they may preserve the equilibrium of our globe.

It is true, that some mountains are dangerous and formidable: they occasion many earthquakes, and those volcanoes which spread flames and destruction around. But we must consider, that, as sulphur, saltpetre, and other minerals, not only contribute greatly to the fertility of the earth, but are also necessary to the life and moistening of all sorts of plants, it was proper there should be a kind of universal magazine, where these materials should be deposited, in order to be afterwards scattered by the winds over the whole earth. And though some inconveniences may result from them, these cannot furnish any reasonable objection against the wisdom and goodness of God, since the blessings we derive from them are infinitely superior to the evils they occasion. In this respect, then, we have no reason to complain of the formation of our globe. If there were no mountains, we should be deprived of several sorts of stones and fossils; there would be neither rivers, springs, nor lakes; the sea itself would become a stagnated marsh; we should want a great number of the finest and most salutary plants, and several sorts of animals: and the privation of even *one* of these things might render our lives gloomy and miserable. Let us, therefore, conclude, that mountains, as well as every other created thing, exhibit the wisdom, power, and goodness of the Creator.

Lord God Almighty, I adore thee, and acknowledge, with the most profound veneration, the wonders of thy wisdom. All that exists, every thing thou hast created, from the smallest grain of sand to the highest mountain, combines and is in harmony with each other, and full of benefit to thy creatures. On the heights, as well as in the depths, on mountains, and in valleys, above and below the earth, thou showest thyself the glorious Benefactor of thy creatures.

FEBRUARY XXIX.

Motives for Confidence in God.

When I reflect on the infinite perfections which are manifested in the plan of the universe, and on the manner in which God conducts and governs it, my confidence in him must necessarily increase and strengthen

more and more. How easy ought I to be, in regard to my life, since it is in the hands of that great Being, of whose power, wisdom, and goodness, I have as many proofs as there are creatures before me! What wishes can I form for my happiness, which may not be fulfilled by that God whose unlimited power has raised so many millions of worlds out of nothing? Are there any troubles, sorrows, or difficulties, from which I may not be happily drawn, by that infinite wisdom which has spread the heavens, and formed every creature in so wonderful a manner? What can hinder me from committing my way unto the Lord? What can prevent me from having recourse to him in all my troubles and distresses, and from hoping that he will hear my prayer? It is true, I am a very weak creature; I am lost in the immense multitude of his works; and when I represent to myself his greatness, and the infinite extent of his government, I often say to myself, Who am I, to dare to hope that this great Being will always listen to me, and that he will deign to cast his eyes on me, every time my troubles compel me to have recourse to him? But, on the other hand, I comfort myself, when I consider that his greatness, his majesty, and the government of so many millions of worlds, do not hinder him from extending his cares to the smallest worm; why, then, may he not give some attention to me, who, though insignificant, have received from him, both as a man and as a Christian, prerogatives much superior to other creatures?

Here my conscience reproaches me with being a sinner; with having, a thousand and a thousand times, wilfully transgressed the commands of my Creator; and thence being, without comparison, more unworthy of his goodness than the lowest creatures, since they have not offended him, nor ever could be guilty of sin against him. My conscience represents the *justice* of God, in as strong colours as the whole world delineates to me his *power* and *goodness:* it makes me apprehend that he may use his power, in giving me as a terrible example of his vengeance to the whole earth; and, it is true, wherever I turn my eyes, I can no where find any relief from these dreadful thoughts, to quiet my perturbed mind, or give me a just subject of consolation. But it is here that the salutary truths of the Gospel come to

my assistance. Eternal thanks be rendered to thee, O merciful Redeemer! The knowledge of God, which, without thee, could only serve to trouble and affright me, is become, by thy sufferings and death, a source of joy and comfort to my soul. It is through thee alone that I can look up to this God, whose greatness all the world proclaims; that I can consider him as a Father, put my trust in him, and hope that he will grant me happiness, not only in this life, but to all eternity.

It is under impressions such as these, that a most enchanting prospect opens to my view, even while I survey the scenes of this frail and perishing world. If the *earth* be full of the goodness of the Lord, *heaven* will be abundantly more so: and on my arrival there, I shall be completely satisfied with the perfection of his love, while his wisdom shall appear before me in all its splendor, and I shall contemplate the grandeur, pomp, and beauty of many worlds, of which, at present, through the weakness of my optics and my understanding, I can obtain but a transient glance. Then shall my heart dilate with sentiments of gratitude and veneration; and my lips shall celebrate, in the noblest accents, the eternal praises of my Creator.

MARCH I.

An Invitation to contemplate God in the Works of Nature.

O YE who adore with me the Lord by whom the heavens and the earth were created, come and reflect on his works! Behold the wonders he has done! Acknowledge, and have a lively sense of his mercies! Of all the knowledge we can acquire, this is the most important, the most easy and agreeable. We could well dispense with many sciences which we take pains to learn; but the knowledge of God and his works is absolutely necessary, if we wish to fulfil the end of our creation, and by that means secure our present and eternal happiness. We do well undoubtedly, to seek to know God, as he has revealed himself in his divine word: but we shall not receive that revelation with an entire conviction of heart, unless we join to it this other revelation, by which he has made himself manifest to us throughout all nature, as our Lord, our Father, and Benefactor. This is the best preparation to understand, and

to receive, the Gospel of Jesus Christ; because, in teaching his disciples the truths of religion, the divine Redeemer often spoke of the works of nature, and made use of the objects which the physical and moral world afforded to lead his hearers to reflect on spiritual and heavenly things.

In general it is a noble employment, and well worthy of man, to study the book of nature continually; to learn in it the truths which may remind us of the immense greatness of God, and our own littleness—his blessings, and the obligations they impose on us. It is shameful for man to be inattentive to the wonders which surround him on every side, and to be as insensible to them as the brutes that perish. If reason have been given to us, it is that we may make use of it in acknowledging the perfections of God in his works. What employment can be more pleasing to the human mind, than meditations on the admirable works of the Most High? to contemplate, in the heavens, the earth, the waters, the night and day—in a word, throughout all nature—the wisdom, power, and goodness of our Creator and Preserver? What can be conceived more delightful, than to discover, in the whole creation, in all the natural world, in every thing we see, traces of the providence and tender mercies of the Father of all beings? There are no amusements, no worldly joys, of which we are not soon tired: but the pleasure we feel in contemplating the works of the Lord, is ever new; and were we thus to employ ourselves during thousands of years, we should be so little fatigued with the repetition of the subject, that it would daily exhibit new and more interesting charms. It is in this light I often represent to myself the felicity of the saints in heaven. I ardently wish to be with them, because I am persuaded it is in their society only, that my insatiable desire of increasing in knowledge and wisdom, can be fully satisfied. But whilst we are at a distance from this felicity, let us, at least, endeavour to come as near to it as possible, by habituating ourselves, in *time*, to what shall be the employment of all the blessed saints and angels in *eternity*. Let us adore God in his marvellous works, and aspire after a more perfect knowledge of his perfections. Let us reflect on his greatness; admire his power and wisdom in each of his creatures; and ob-

serve, in every season of the year, his goodness and tender mercies towards all his creatures. This employment will make us, not only happy, but virtuous; for, if we have God and his works continually in our sight, with what love and veneration shall we be penetrated! with what confidence shall we resign ourselves to him! with what zeal and transport shall we sing his praise! O God, who art so worthy of all adoration, I will continually reflect, with gratitude and veneration, on the wonders of thy power and wisdom, which fill the universe. I will raise myself from earth to heaven, by the chain of beings thou hast formed, in order to know, to feel, and to enjoy thy goodness. Every thing around me, every thing within myself, will serve to lead me to thee as the source of all; every thing will more and more contribute to inflame my soul with love and piety. These, O heavenly Father, are the engagements I make before heaven and earth, in presence of every creature thou hast formed. The sun which shines upon me, the air which I breathe, the earth which sustains me; all nature, so wisely framed for my wants and pleasures; shall one day rise as witnesses against me, if I neglect to contemplate and admire thy works.

MARCH II.

Bad Weather.

NATURE, still deprived of her ornaments, exhibits a wild and gloomy aspect. Thick clouds obscure the azure canopy of heaven, and the atmosphere is loaded with snow and vapours. The mornings are wrapped up in impenetrable fogs; and the sun scarcely peeps through the general obscurity, before dark and stormy clouds arise, to prevent the earth from feeling his genial influence. How little warmth does he diffuse! Scarcely a herb ventures to spring up—every thing remains lifeless, dreary, and destitute of charms!

"When shall we hail the return of lovely spring? When will those fine days arrive, when the early flowers shall expand to our view, and allure us into the fields, and gardens?" I doubt not but many use this language, and bear with impatience the gloomy days of March. But let us consider, that even this temperature of the air, which we dislike, contributes to the general

good, and is part of the plan formed by the Almighty in his government. Were it not for these days, which appear to us so disagreeable, all our hopes of the advantages of summer would assuredly vanish.—Storms are blessings of nature, and frosts are means which she makes use of to fertilize the earth. If the air were at present milder, and the weather finer, millions of insects would be hatched, which would be very hurtful to the seeds sown in the earth, and to the blossoms. What a risk also would the buds run, which the mild weather had brought forth, should there afterwards come a frost? But such is our blindness and ignorance, that we murmur against God when we ought to adore and bless him; and we consider as imperfections those very things which should lead us to acknowledge his wisdom and goodness. We seldom know what we desire. To punish us for our imprudent and unreasonable wishes, God need only to grant them. If the spring already displayed the whole of its charms, how many of the following days would lose their value! How soon should we be weary of the genial showers, and how seriously would our health be affected by the speedy transition from intense cold to excessive heat! It is a blessing of God—a blessing, of which, with many others, we are too regardless, that spring draws on imperceptibly: its delay keeps us in the most agreeable expectation, and our pleasure is the greater when it comes. The rough, stormy weather of March is a remain of the severity of winter: but it prepares us for the enjoyment of fine days, and is the precursor of that delightful calm which spring diffuses upon our happy country.

O God my Creator, I will adore and magnify thy name in these stormy days: being more and more convinced of the wisdom and excellence of thy government. I desire to rejoice that in all times and seasons, in tempests and in calms, in snows and in rains, as well as in the most delightful weather, *thou* art my unchangeable Father, Preserver, and Friend. The present uncomfortable season will soon be succeeded by the lovely days of spring; and experience convinces me, that human life is, in reality, a continual vicissitude of pleasant and stormy days.

MARCH III.

The State of some Animals during Winter.

We do not, at present, see any of those insects or birds, millions of which exist, during summer, in the air, on the earth, and in the waters. At the approach of winter they retire from our climate, the temperature of which no longer agrees with them, and in which they can no longer find a sufficient supply of food. The first stormy day is a signal to them for the suspension of their labours, and a change of habitation. Let us not, however, erroneously suppose, that these creatures are *destroyed* by the rigors of winter:—for Providence takes care that none of them shall perish.

The bodies of some animals are so organized, that the same causes which deprive them of food, effect such changes in them as preclude the necessity of alimentary sustenance. The cold benumbs them, and they fall into a profound sleep, which continues till returning warmth opens the earth, reproduces the things necessary for their support, and awakens them from their torpidity. These animals hide themselves in the sand, in pits or hollow places, or in the bottom of ponds or marshes, where they cannot be found out or disturbed. Their state is a kind of death, or rather a swoon; and they do not revive till the gentle warmth of spring penetrates to their retreats. Some sorts of birds, at the approach of winter, undertake long journeys, to seek, in other climates a more temperate air and suitable food. Some fly in large flocks from one country to another. Several go to Africa, crossing the Mediterranean, and return to our countries, in the ensuing spring.

Lord, how admirable is thy wisdom! how tender and beneficent thy mercy to the least of thy creatures! Thou hast impressed upon certain animals that wonderful instinct which warns them of the day in which they should abandon their summer habitations, in order to pass their winter in a more favourable clime. Thou hast pointed out to others the places where they may pass in safety their night of winter in a sound sleep: and thou revivest them again when the season of their new life arrives. Every time I reflect upon these changes, I am naturally led to think of what will hap-

pen to myself at my death; for my state, in some measure, resembles that of these birds. At the end of my life, I also shall quit my home, my pleasures, and my companions, to go into a better world: my body also shall sleep for some time; but, at the moment of the new creation, I shall awake, and, clothed with the strength and beauty of youth, begin a life that will be eternal. What happens to animals affords me another edifying reflection: I perceive that God watches over the very smallest link of the immense chain of beings; I discover with what paternal goodness he provides for the preservation of the weakest and lowest of his creatures, in situations wherein it would appear impossible to mere human wisdom. Would it not, then, be doing injustice to the wise providence of my Creator, to doubt his care of me, and to abandon myself to trouble and anxiety respecting my subsistence? Certainly, that God who gives to birds and insects their food in due season; that God who provides them retreats, and places of rest, in pits and rocks; who directs them to find their food in different countries;—that same God will take care of me in every time of need and distress. I have a perfect confidence that he will provide all that is necessary for my support; and even when I see the least likelihood of it, he will find me a place of refuge, where I may rest in peace and safety.

MARCH IV.

Winds and Tempests.

With what violence is the air agitated! Hear how the winds roar in the upper regions! Behold how the clouds gather! how rapidly they fly! what deluges of rain they pour upon the earth! How terrible is the force of the winds! they tear up the largest oaks; they throw down palaces; they shake the foundations of the earth; and, perhaps, alas! at this moment, some unfortunate vessel is plunged into the abyss, by the violence of the storm: the winds bellow above it; a terrific gulf yawns underneath; and all around the waves of the sea rise mountains high. Oh! in what distress are those unhappy people! How they wring their hands! how they shudder at every rising wave that threatens to bury them in the deep! Before the fury of the tempest a-

hates, some millions of families may be ruined; and more still may be plunged into the deepest misery, by the death of their relations and friends.

But why does the wise and beneficent Sovereign of the world thus permit the winds to spread terror and destruction by sea and land? Mad question! What temerity, to presume to arraign and censure the government of a Being infinitely wise! Ought we not rather to reflect on his ways with respectful silence, and be persuaded they are always replete with goodness? If whirlwinds and tempests make terrible ravages; if they shatter vessels, or plunge them to the bottom of the sea; if they overthrow buildings, and destroy men and animals, have we a right, on these accounts, to blame the government of the Lord?

They who calculate with so much care the mischief this element occasions, have they also reckoned the advantages which accrue from it? Audacious mortals! admire and adore the Sovereign of the world, who can even make storms contribute to the good of the universe. It is, in reality, by the particular direction of Providence, that, towards spring, storms and tempests usually arise. At the return of that beautiful season, the moist and mild air opens the earth, which had been closed all the winter. By this change of temperature, the air, which the cold had purified, is again filled with noxious vapours. Plagues and epidemic disorders would soon destroy men and animals, if the air, by being agitated with storms, were not restored to its purity and salubrity. By this mean, however, not only the stagnated vapours are put in motion, but other vapours, of different kinds, being violently agitated, make a happy mixture, equally conducive to the health of mankind, and to the fertilization of the earth. Is it not, besides, a great advantage, that the winds serve, in some degree, as wings for ships; and that these floating houses, laden with the riches of different parts of the world, can often, in less than twenty-four hours, make a passage of more than fifty leagues? Thus, even in the midst of storms and tempests, the Lord is beneficent to his creatures. Whenever, therefore, I hear the winds roar above me, I will acknowledge his goodness, and reflect with pious gratitude on the wisdom of his government. How admirable are his ways, even in re-

spect to storms and whirlwinds! Thou, O Lord, takest the winds out of thy treasures: thou bringest them from the extremities of the earth; thou appointest the course they are to take; thou settest bounds to them, and orderest them to be calm, when they have fulfilled thy designs. Wherefore, then, should I be terrified or alarmed, when thou directest these ministers of thy will to execute thy orders? O my soul! though the tempest should howl around thee, the rocks rend, the earth tremble, and a veil of darkness be thrown over the face of nature, let nothing dismay thee, nor disturb thy tranquillity: but trust implicitly in the Lord of hosts, and repose thy cares on the paternal bosom of Him who rules and governs the universe. Cannot he who appoints the courses of the stars and the winds, point out a path to *thee*, in which thou mayest walk with confidence and security? However stormy, then, my life may be in this world, does it become me to murmur at it, or to indulge a spirit of fear! No: that God who imposes silence on the most impetuous winds, can easily check the tempest of sorrow which threatens to overwhelm me: and, when the violence of afflictions shall have sufficiently tried me, I may behold a serene and luminous day, and enjoy a perfect calm.

Alas! how many, who are now crossing the sea for the good of society, are struggling with the waves, in trembling expectation of being in a moment swallowed up! I imagine their distress, while, safe at home, I listen to the roaring of the tempest.

Sovereign Disposer of all events! Ruler of the winds and seas! deign to hear the prayers they offer unto thee in their distress; and graciously extend to them that merciful regard which can so easily effect their deliverance.

MARCH V.

The Aurora Borealis.

In winter, towards the vernal equinox, a sort of luminous, transparent, and variegated clouds frequently appear in the sky. A splendid light from the north gradually communicates itself to the clouds in that quarter, till, at length, streams of a pale light issue from those clouds, and extend to the zenith.

This ethereal phenomenon, called the *Northern Lights*, or *Aurora Borealis*, is, in some respects, one of those natural effects the cause of which cannot be exactly determined. Some naturalists suppose it to be a magnetic substance, which, accumulating and thickening towards the north, may shed a certain light at a distance: others suppose, with greater probability, that the Aurora Borealis is occasioned by nitrous and frozen particles, which, rising in the air, and being joined to the vapours, and to the fat and oily exhalations sent forth by the whales and other immense cetaceous fishes which abound in the north, are lighted up and made brilliant by that light which the Laplanders almost continually enjoy: lastly, some philosophers pretend that this phenomenon is only an inflammation of the atmosphere, and a storm not yet come to maturity. The uncertainty in which the best informed and most learned men are respecting this phenomenon, may afford us a lesson of instruction. How many things do we see in the air, in the sky, and upon earth, which are still mysteries, even to the most eminent naturalists! These phenomena ought to humble the human mind, which pride and vain curiosity often prevent from acknowledging how limited its faculties are. A thousand inconsiderable things confound the most learned in their meditations, and elude their deepest researches. There are a thousand objects, which, indeed, we acknowledge to be planned with much wisdom, and to be very useful; but we seldom arrive at discovering their true principles, their purpose, and their connexion with the corporeal world and its several parts. However, this ignorance does not affect our happiness; and though, for example, we cannot exactly determine whence the *Aurora Borealis* proceeds, we may live peaceably and happily without that knowledge: and, notwithstanding our ignorance of many other subjects, we know, at least, that every phenomenon of the physical and intellectual world, happens only by the will of an all-wise, almighty, and perfect Being, who directs them for the good of the universe. We have no occasion to know more in a life so short as ours; and this is, doubtless, sufficient to induce us to adore and bless him who is the Author of things so wonderful, and so far beyond our comprehension.

How thankful ought I to be that I was not born in those dark ages of ignorance and superstition, where whole nations were overwhelmed with terror and consternation by these phenomena. This magnificent spectacle delineated to their perturbed imaginations whole armies fighting in the air, and hence they drew the most direful omens and prognostics. The Aurora Borealis was to them a prophet, which foretold sometimes war, sometimes famine, and sometimes epidemic disorders.

For my own part, however, I find, in the mild and majestic splendor of this light, a token of the power and goodness of God. I behold those celestial lights without fear, because I know that the Lord of heaven has not created any thing to be a torment and misfortune to his creatures: and, it is highly probable, that the inhabitants of the northern regions, may derive great advantages from these phenomena, though in our country they have so little influence.

MARCH VI.

The extreme Smallness of certain Bodies.

The vaulted sky; the depths of space, and its unlimited extent; those vast bodies which shine in the firmament; the variety of creatures which cover our globe, and which fill the air and the water; all declare the glory of the mighty God, and announce the infinity of his power. But it must not be supposed, that the power and wisdom of the Creator is only visible in the immense size of the world: even in the smallest objects, in the most inconsiderable parts of the natural world, the greatest subjects of admiration are to be found. The construction of a grain of sand, seen through a glass which magnifies objects a million of times, is sufficient to fill the greatest mind with astonishment. Who, indeed, would not be surprised to learn, that an insect lives in the midst of a grain of sand which the naked eye can scarcely discover? Examine also, with a microscope which magnifies some millions of times, the mould on a bit of bread, and you will discover a thick forest of fruit trees; the branches, leaves, and fruit of which may easily be distinguished. But even in your own body you may perceive ob-

jects of inconceivable smallness, which, perhaps, you have not yet taken notice of, and yet deserve all your admiration. It is covered with an innumerable multitude of pores, of which the naked eye can only distinguish a small part. The epidermis resembles the scales of a fish: and it has been calculated, that a grain of sand would cover 250 of those scales, and that one single scale would cover 500 of those interstices, or pores, which give passage to the sweat and insensible perspiration. Have you ever reflected on the wonderful construction of the hairs of your head? Inconsiderable as these appear, they may justly be reckoned among the master-pieces of Divine workmanship. They are hollow tubes furnished with bulbs or roots, consisting of a marrowy substance, and furnished with a variety of little threads, or filaments, which unite in them. In that whitish matter called *tartar*, which settles upon the teeth, a great number of small animals have been discovered by a good microscope; and it has even been found that in a portion of this substance not larger than a grain of gunpowder, there were a million of those animalculæ.

Are not these circumstances calculated to humble us in our own eyes, and raise our ideas of the Supreme Being? Every thing ought to convince us that there are a thousand objects in nature which are to us impenetrable mysteries; that a thousand discoveries remain to be made; and that things which are not entirely unknown to us we still know but superficially. There are, perhaps, a multitude of wonders in our own bodies, which no one has thought of or suspected. How many imperceptible objects may there not be in nature, out of the reach of the microscope and of our understanding, which, if known to us, would afford new proofs of the greatness of God! But the little we do know may suffice to convince us that in small things, as well as in great, the power, wisdom, and goodness of the Lord are most admirably manifested. The sand of the sea declares the glory of the mighty God, as well as the expanse of the heavens, the splendor of the sun, or the fury of the tempests. The smallest worm bids us give glory to his Creator. The trees, in the magnificence of their clothing, the grain and the seeds, in their minuteness, cry aloud with united voice, "It is God

who hath made us: give glory to our Creator." Even the most diminutive creature upon earth reminds us of his greatness. His power and wisdom are equally admirable in the formation of the gnat, as in the construction of the elephant; in the humble form of a blade of grass, as in the majestic height of the oak; in a grain of sand, as in the highest mountain. No creature he has formed can be unworthy our attention. Who can tell if the object of the most insignificant appearance may not contain the greatest wonders? A being that God hath vouchsafed to form, is it not, from that very circumstance, worthy of our observation?

O Lord! I am myself a minute being, in comparison of the innumerable worlds which have risen under thy creative hand; notwithstanding thy good providence preserves me, and directs my movements with the same wisdom that directs and sustains the harmony of the spheres! What am I, O God, that thou shouldst be thus mindful of me? and how can I, who am but dust and ashes, sufficiently express my gratitude for the innumerable mercies I have received from thy hands?

MARCH VII.

Winter subsides gradually.

The same wisdom which, at the beginning of winter, caused the cold to increase gradually, has ordained that it shall also diminish by degrees; so that this severe season now draws insensibly towards its end. The sun already remains longer above our horizon, and reflects more heat upon the earth. Flakes of snow no longer cloud and darken the atmosphere; but the nights are only attended with a white frost, which vanishes with the mid-day sun. The air becomes serene: and the fogs and vapours either disperse, or fall in fertile showers of rain. The earth becomes lighter, more moveable, and fitter to receive moisture: the seeds, also, begin to shoot: the branches which recently appeared dead, put forth their tender buds; and a few blades of grass venture to spring out of the earth. We see the preparations which nature is making to restore verdure to the fields, foliage to the trees, and flowers to the gardens. She silently labours to bring back the spring, though tempests, hail, and frosty nights, still oppose it in some

measure. She will soon lose her sad and gloomy appearance; and the earth will shine again in all the beauty of youth.

Every change in nature is made thus gradually; every effect which we perceive, has been prepared by preceding effects; and a thousand little circumstances which escape our observation, succeed one another, till the end which nature proposes to herself is fulfilled. An infinite multitude of springs must be put in motion, before a single blade of grass can shoot, or a bud be unfolded. All the changes in winter, so disagreeable to us, must necessarily take place, in order to open to us a promising prospect. Storms, rain, snow, and frost, were essential, that the earth might rest and recover its strength and fertility. Neither could these changes happen sooner or later, be more or less sudden, or have a longer or shorter duration, without injuring, in some sense, the fertility of the earth. Now that the advantages of these plans of nature open insensibly to our view, we acknowledge her designs; and the happy consequences of the winter plainly demonstrate that it is a real blessing to the earth.

As the seasons, so do the periods and events of our existence continually vary. In the life of every man, there is so admirable and mysterious a chain of causes and effects, that nothing but futurity can discover to us why such and such events were necessary and beneficial. I see, perhaps, at present, why God caused me to be born of such parents rather than others; why precisely such a town should be the place of my birth; why such and such unhappy accidents happen to me; and why it was necessary I should embrace such a kind of life in preference to any other. All this was then concealed from me: but now I comprehend that the past was necessary for the present, and for the future; and that several events which did not at all seem to agree with the plan of my life, were, however, indispensable, to make me as happy as I now am. I also gradually approach the moment in which all the events of my life will be laid open and explained. Perhaps I am very near the period wherein the winter of my life will draw to its end, and I shall be on the point of entering a new world. O my God! grant that my heart may then be full of hope and joy: and, when all the visible creation

disappears from my sight, grant me a glimpse of a blessed eternity; and give me such a foretaste of it as may raise me above every earthly and perishable object.

MARCH VIII.

The Human Body, relatively to its exterior Parts.

Now that nature does not appear in full beauty, while the fields and gardens afford no charms to unbend my mind agreeably, I will meditate on myself, and reflect on the formation of my body. This will furnish me with the best opportunity of acknowledging the power and wisdom of God: and I shall learn, at the same time, to be sensible of the value of my life.

Of all the visible parts of the body, the head holds the first rank, not only from its beauty, but because it contains the principles of sensation and motion. All the sentiments and passions of the soul are painted on the face, which is the most beautiful part of man, and wherein are placed the organs of the principal senses, by means of which we receive the impression of outward objects. The several motions of the lips and tongue, whether they touch the palate or the teeth, serve for articulation, and enable us to give different inflections to the voice. With the teeth we can either cut or grind our food: and the great number of glands in the mouth furnishes the saliva necessary for digestion. The head is placed on the neck; where it turns, as on a pivot, to which side we please. After the neck come the shoulders, so formed as to bear heavy loads. To the shoulders the arms are united; and to those the hands, which are so constructed as to perform a variety of movements—to touch, take, raise up, draw back, repel, &c. the joints and bones serving to support and facilitate these motions. The chest contains and guards the heart and lungs, and, for that purpose, is composed of strong ribs and bones. The midriff separates the chest and the belly, which contain the stomach, liver, spleen, and intestines. All this mass rests upon the hips, thighs, and legs, which, as well as the arms, have several joints to make the motions easy. The feet support the whole; and the toes also contribute to it, as they serve to fix the feet firmly on the ground. The flesh and skin cover the whole body. The hair of the

head, and the down on other parts, guard from the bad effects of cold.

What a variety is discoverable in these exterior parts of the body! and yet these are only the principal and most essential of them. Their form, construction, order, situation, motions, and harmony, all afford incontestable proofs of the wisdom and goodness of our Creator. No part of the human body is imperfect or deformed; none useless; no one hurts the other. If, for example, we were deprived of the use of our hands, or if they were not provided with so many joints, we should be unable to do many things we do. If we were to preserve our reason, and yet be quadrupeds or reptiles, we should be unfit for arts or trades; we could neither act, move, nor turn, as we wished. If we had but one eye, in the middle of our foreheads, it would be impossible to see to the right or left, to take in so large a view, or distinguish so many objects at one time. In a word, all the parts of the body are so constructed and arranged as to concur to the beauty and perfection of the whole, and are most excellently adapted for their different purposes.

Let us, therefore, bless our Creator, who has made us so wonderfully: and, while we feel the happiness of our formation, let the sense of his goodness never be effaced from our minds.

O that we may recollect it whenever we contemplate our bodies, or make use of our members; that, instead of misemploying any of our powers, we may continually employ ourselves in such actions as may tend to the good of society, and be ever solicitous to glorify the Deity with our bodies and spirits, which are his peculiar property.

As a farther stimulus to make this noble use of our bodies, let us reflect, that, after they have lain some time in the grave, they shall be raised again incomparably more perfect and glorious. Shall we then dishonour a body which is hereafter to be conformed to the image of our adorable Saviour, and translated to a world of holy spirits? shall we abuse the members which are destined for heavenly and sublime employments? No; the hope of future bliss should teach us to consider our bodies as temples of the Deity, and to preserve

them pure and undefiled till the second coming of Jesus Christ.

MARCH IX.

The Hope of Spring.

Every day brings us nearer to the anticipated pleasures of spring, and strengthens our hope of speedily seeing the time in which we may respire more freely, and contemplate nature with more joy and satisfaction. This sweet expectation is almost the only one which does not deceive us, being founded on the invariable laws of nature. The charms of this hope are felt in every heart without distinction; for the mendicant, as well as the monarch, may behold the spring approaching with unmixed joy, and promise himself sure pleasures in it. This hope is not attended with impatience, because it extends very far, and takes in a multitude of objects. The coming of spring procures us a thousand new delights—the beauty and perfume of the flowers; the singing of the birds; and the universal prospect of mirth and pleasure. Most earthly hopes are attended with anxieties; but that of spring is as satisfactory as it is innocent and pure; for nature seldom deceives us. On the contrary, her presents generally surpass our expectations, both in number and in quantity. Let us, therefore, in these boisterous days of March, give ourselves up entirely to the sweet hope of spring, and the joy which it inspires. It is a great blessing of Providence, that, in all the changes of seasons, and the vicissitudes of life, we can still nourish hope in our hearts. Winter, which now draws near its end, would have been infinitely more melancholy without this comfortable prospect. Encouraged by the hope of spring, we have patiently borne the inconveniences of cold and bad weather, and are now on the point of seeing that hope abundantly realized. After a few more disagreeable days, the sky will become serene, the air milder; the sun will reanimate the face of nature, and the earth will re-assume her ornaments.

O merciful God! I sincerely thank thee for those sources of joy and consolation which thou hast appointed to soften the evils of life. With what goodness dost thou veil future evils from our eyes, while our spirits

are cheered by a glimpse of the blessings and comforts designed for us! Without *hope*, the world would, indeed, be a vale of misery, and life itself a continued series of pain and sorrow. But thou hast given us hope, as an agreeable companion, through our pilgrimage. When all around us is gloomy, this opens a cheerful prospect of futurity, which revives our languid souls, and enables us to walk with content through the thorny paths of life. How often, O heavenly Father! hast thou thus raised my dejected heart, and strengthened my courage when ready to fail me! I adore thee for every ray of hope which has animated my soul; for every blessing I have received, and for all those which are still reserved for me. What words, indeed, can express the sublime and magnificent hopes, which, as a Christian, I am authorised to indulge! Blessed be thy mercy, thou divine Redeemer, which has entitled me to expect a felicity, permanent and complete, beyond the grave! Adored be thy name for the blessed hope of a glorious immortality! What would life be, without this inestimable blessing? What would be the happiness of the present world, had we no hope of eternal and unfading joys hereafter? And if we possess this comfortable hope, ought we not to account our present calamities as nothing? Though the winter of life should prove long and rigorous, hope will point to the beauties of the coming spring, and enable us patiently to await the renewal and perfection of our existence in a future and a better world.

MARCH X.

The Hoar Frost.

It is very usual, at this season, for the bushes, and other things exposed to the morning or evening air, to acquire a sort of crust on the surface, like what is commonly called *iceing* on sweetmeats. This appearance, which we term *hoar frost*, is merely occasioned by exhalations condensed and frozen by the coldness of the atmosphere. The dew which (however imperceptible it may be) falls every day, becomes congealed in cold weather, and assumes that white appearance so often seen in a morning; and as large bodies retain their heat the longest, we generally perceive more of this frost

upon the grass and bushes than on the larger trees. When the dew fixes on bodies considerably colder than itself, it communicates its heat to them immediately; and, of course, the dew, having lost the cause of its fluidity, its particles contract, draw close, and form a light coat of ice. If to those vapours disposed to freeze, others be joined which have not that disposition, the latter instantly lose their fluidity, and settling irregularly on, or beside, the former, together form a slender coating of ice. In this manner our hair, as well as that of animals, is sometimes covered with hoar frost: the perspirable matter exposed to the cold air becomes congealed, and this effect is produced. It is thus also that we account for the shining threads often seen in winter on buildings. If the walls have a certain degree of cold, the aqueous vapours which are settled on them, condense and freeze. But when the cold is very intense and it freezes hard, this effect does not follow, because the vapours are already frozen in the air; and even supposing them to light upon the wall, they cannot remain there, because they only touch it with some of their parts. However, it sometimes happens, in hard frosts, that the walls become white, as if covered with snow: but this is a certain token that the severity of the cold is going to abate.

Here, again, let us acknowledge the wise and beneficent views of our Creator. In his hand, and under his direction, all the effects of nature, at every season, tend towards the general good, and the fertility of the earth; and since every phenomenon, in each link of the great chain of creation, contributes to the perfection of the whole, is it not reasonable to acknowledge the wisdom of God, in the minutest parts, and to celebrate, with grateful hearts, every blessing which he bestows upon us?

MARCH XI.

Variety of Means which contribute to the Fertility of Nature.

The wisdom of Providence makes use of several means to render the earth fruitful. Sometimes the clouds fall in rain, in order to purify the air from hurtful vapours, to soften the ground, and to supply it with fresh and

nourishing juices. At other times, when the benefit of rain is withheld, a gentle dew moistens and fertilizes the soil, and revives the plants which were ready to wither away. God has ordained that each season should have peculiar means of diffusing fertility. The snow, which in winter covers our fields and meadows, not only serves as a defence from the severe cold, but, by means of the salts with which it is mixed, contributes essentially to the fertility of the land. The frequent tempests that are felt in spring, preserve the air from corruption, dry the earth, and disperse the rain over the whole surface of the globe:—and even those storms which occur in summer, and excite the terror of fearful persons, are, in reality, productive of many important advantages. With every thunder-shower the Creator spreads his precious blessings on the earth. We may, without extravagance, assert, that there is no revolution in the air, or on the earth, which does not, directly, or indirectly, contribute to the fertility of our globe. Each season brings back the phenomena peculiar to itself; and each phenomenon of nature produces effects, the happy influence of which is more or less visible. Even those plagues which cause the entire destruction of certain countries, are only particular evils, which contribute to fulfil beneficent views, as there result from them advantages to the world, when considered in the whole.

Infinitely wise and beneficent Creator! I desire, at all times and in all places, to acknowledge thy tender care and merciful interference. Lord of times and seasons! thy praise ascends from the orbit of the earth to the heaven of heavens! Our globe rolls in the starry expanse, sometimes blooming with flowers, sometimes covered with snow; here clothed with luxuriant vineyards, there deformed by thorns and briers: yet it perpetually chants thy praise, in notes responsive to the music of the spheres. When the snow and ice transform our meadows into deserts; when the tempest roars in the air; when thy lightnings cause the hearts of men to tremble; when the rivers, leaving their beds, overflow entire countries; and all the elements seem to conspire for the destruction of the world; it is *then* that thou art preparing, for the inhabitants of the earth, health, peace, joy, and abundance!

Here I represent to myself the different means, by which God fertilizes the moral world. In order to lead mankind to a sense of their destination, to a horror of sin, and to the practice of virtue, he sometimes makes use of violent, and sometimes of mild methods. Sometimes he thinks proper to punish the sinner severely, to lay heavy judgments, and chastisements of a long duration, upon him, in order to awaken him from his slumber. He speaks to hardened hearts, as to the Israelites from mount Sinai, with lightnings, and with a voice of thunder. With others he makes use of opposite measures; rescuing them from vice and vanity, and alluring them to himself, by a display of blessings and goodness. Of this truth *I* am a living witness; and I acknowledge, O Lord! to the praise of thy mercy, that thou hast done every thing to lead me to thee. Sometimes it has pleased thee to lay thy heavy hand upon me, and to humble my pride by paternal chastisement. Thou hast appointed sickness, and other misfortunes, to lead me to reflect upon my errors. At other times thou hast endeavoured to draw me by milder ways: thou hast loaded me with blessings, and thy mercies, like the refreshing showers of spring, have fallen abundantly upon me. But what hast thou obtained from me, in giving me so many means of grace? Have I borne the fruit which a good soil never refuses when the sky is favourable to it! Hitherto my heart has too much resembled a rock, which thunders could not shake, nor showers penetrate: but I trust I shall henceforth become more docile and obedient. The longer I defer my repentance, the more will my sins and follies increase, and the more difficult it will be to banish them from my heart. I ask but one favour, O my God!—it is, that thou wilt never cease to strive with me. Thou mayest either intimidate me by threats, or encourage me by thy promises; lead me to thee by the rigors of punishment, or by the persuasion of mercies; I will bless all the means of salvation thou mayest choose: only grant that I may return to thee, and become fruitful in good works.

MARCH XII.

Advantages derived from the Sea.

A SUPERFICIAL view of our globe might induce us to suppose that the proportion of water is considerably

too great, and that it would have been more advantageous to mankind, had the Creator changed into firm land, that enormous space which comprehends the ocean, seas, lakes, and rivers. But, in this, as in a thousand other instances, we only show our ignorance and want of judgment.

If the ocean were reduced one half, it could only produce half the vapours it now exhales; consequently, we could not have so many rivers, nor would the earth be sufficiently watered: for the quantity of the waters which rise is in proportion to the surface of the sea, and the heat which attracts them. Thus the Creator has wisely ordained that the sea should be large enough to furnish the necessary vapours for watering the earth, which would not have been possible, if it had occupied a less space. The sea, then, has been made a general reservoir of waters, in order that the heat of the sun should draw up those vapours from it, which afterwards fall in rain, or, when they gather at the tops of mountains, become sources of rivers. If the extent of the sea were more confined, there would be many more deserts and barren countries, because there would be less rain, and fewer rivers. And what would become of the advantages which result from commerce, if this mass of water did not exist? God did not design that one part of the globe should be totally independent of the rest: on the contrary, he ordained that there should be an intercourse between all the people of the earth. On this account, he intersected the globe with seas, to open a communication between the inhabitants of the remotest countries. How could we procure our foreign treasures, if we had no other mode of conveyance than horses and carriages? or how could commerce itself exist, if navigation had not opened the way for it? In this division of water and land on our globe, I can see a new proof of the wisdom and goodness of the Creator. However distant I may be from the sea, I daily experience its salutary effects.

O! why are we not more grateful to God for this blessing? The knowledge of his adorable attributes which the earth and seas impress upon us, surely ought to excite us to glorify his holy name! Lord, my heart is disposed to render the thanks due unto thee; assist me, by thy Holy Spirit, that my gratitude may be ac-

ceptable. Perhaps I am not as sensible of this blessing as I ought: other nations, probably, feel the value of it more than I do. But, were not any people to remember thy mercies, the sea itself would bear testimony of thy power, and be the herald of thy wonderful goodness: for all thy creatures, the sea, the earth, and all their inhabitants, celebrate thy praise.

MARCH XIII.

The Difference between Animals and Plants.

The difference between animals and plants is so great, and so obvious, that it requires but a very slight observation to be convinced of it. Undoubtedly, one remarkable difference consists in the animals having the faculty of moving and changing place, of which the vegetables are totally deprived. But a more essential difference is, that animals have the faculty of feeling, which cannot be attributed to plants. To this must be added, the manner of being nourished. Animals, by means of exterior organs, are capable of choosing their proper food; plants, on the contrary, are obliged to take what nourishment the earth affords, without any choice. This is given them from the moisture of the earth, and by the action of the veins in the leaves, which attract and imbibe the nourishing juices with which the atmosphere is filled. The number of species is much greater in the animal than in the vegetable kingdom: among insects alone, there may, perhaps, be a greater number of classes (including those which can only be seen with a microscope) than there are of visible plants on the surface of the globe. Besides, animals have less conformity with each other than plants; which renders their classification more difficult. Another circumstance which marks the difference between the two kingdoms, is the manner in which they propagate, very distinct from each other, notwithstanding the accidental similarity found between them. Who can avoid observing another remarkable difference as to the place where they live? The earth is the only place where plants can grow and multiply. Most of them rise above its surface, and are fastened to the soil by roots more or less strong: others are entirely under ground: a small number grow in the water; but, in order to live, it is

necessary they should take root in the earth. Animals, on the contrary, are less limited in place. An innumerable multitude people the surface and the interior parts of the earth: some inhabit the bottom of the sea; others live in the waters at a considerable depth: many live in the air, in vegetables, in the bodies of men and animals, in fluids, and even in stones. If we consider animals and plants, in respect to size, we shall find a difference still more striking. Between the size of a whale and that of a mite, the distinction is much greater than between the highest oak and a bit of moss. Lastly, it is particularly in the form of plants and animals that the general and most obvious difference subsists. Most of the latter have, in that respect, so distinct a character, that it is impossible to confound them with vegetables. However, let us not imagine we have perfectly discovered the limits which divide the animal from the vegetable kingdom, or that we have found out all that distinguishes them. Nature, to diversify her works, makes use of almost imperceptible shades. In the chain of beings, perfection increases successively, and rises by millions of degrees; so that a more perfect species differs very little from that which occupies the space immediately below it. How narrow are the limits which separate the animal from the vegetable world! There are plants which appear sensible, and animals which seem deprived of sensation. Nothing demonstrates the truth of this more than the discoveries which have been made in *corals*. These were formerly considered as marine plants; but subsequent observations have induced our naturalists to assign them a place in the animal kingdom; for that which was once supposed a flower, is now known to be a real animal. Thus every order of creatures rises insensibly to perfection by numberless degrees. The more observations are made, the more reason is there to be convinced that it is impossible to fix the exact limits of the three kingdoms—the mineral, the vegetable, and animal; and that amongst most creatures there is more conformity than dissimilarity. It is, at least, certain, that the limits which divide the more perfect creatures from those that are a degree less so, become at last imperceptible to understandings limited as ours. These observations ought to convince us, that the world, with all the crea-

tures it contains, is the work of an infinite Being. So much harmony and such differences, so much variety with so much uniformity, could only proceed from the almighty, omniscient, and perfect Being, who created the universe and all that is in it. Let our hearts rise towards him. Let us go from the stone to the plant, from the plant to the brute, from the brute to man, and from man to the celestial spirits; then take our flight towards the everlasting, incommensurable Being, the Creator of the world, the Preserver of plants, the Protector of animals, the Father of mankind, the King of spirits. Measure, if possible, measure his greatness, and try to fathom the depth of his wisdom. Most holy God! created beings are too weak to comprehend thy works: they are immense; and to tell them all, would be to be infinite like thyself. Therefore, the less capable we are of conceiving how far thy wisdom extends, the more we ought to reflect on thy greatness; and, above all, to imitate thy goodness as much as is in our power. We see that no creature is deprived of the merciful care of the Lord: it is extended to the stone and the plant, as well as to man and animals. In his sight there is, in some respects, no distinction: his mercy is over all his works. Let us, in this also, endeavour to imitate our Maker. We occupy, it is true, a distinguished rank among created beings; but, let us take care not to be cruel or tyrannical towards creatures who appear inferior to us. Let us rather endeavour to enjoy, with gratitude and moderation, all things designed by God for our use and comfort.

MARCH XIV.

The Uniformity and Variety in the Works of Nature.

The heavens above and the earth on which we tread, though they present, at different times, varied spectacles, and a diversity of magnificence, remain unchanged from year to year, and lose nothing in the lapse of revolving ages. At one time the sky is obscured by mists, or covered with heavy clouds; at another, it is perfectly serene, of a pure azure, or painted with the most brilliant colours. The darkness of night, and the light of noon; the dazzling splendour of the sun, and the paler light of the moon, succeed each other regu-

larly. The immeasurable space of the heavens appears sometimes a desert, and sometimes strewed with an infinite number of stars. To how many changes and revolutions also is our earth subject! For some months uniform, and unadorned, the severity of the winter having robbed it of its beauty; but the spring will soon renew its youth; the summer will show it still more rich and beautiful; and, in some months after, autumn will pour upon us every sort of fruit.—What variety also on our globe between one country and another! Here, a flat monotonous landscape presents plains beyond the limits of sight; there, high mountains rise, crowned with forests, while the valleys at their bases are watered with brooks and rivers. Here, gulfs and precipices: there, stagnant lakes; and farther off, impetuous torrents. On every side is seen a variety which pleases the eye, and opens the heart to sensations of pure and sweet delight. This same assemblage of uniformity and variety is found in all the vegetables on our globe. They receive from their common parent the same nature, and the same food; they have all the same manner of springing up and growing; yet what a prodigious difference between a blade of grass and the towering oak! All together are ranged under certain classes. Those of the same species are, indeed, very like one another; and yet what differences we see in them! It is the same in respect to animals. The wisdom of the Creator has divided them also into classes; and, whatever variety may exist among them, they still preserve essential resemblances.—And however *man* may be elevated above animals in certain respects, there are many things which he enjoys in common with the meanest of them. Like them he requires constant nourishment, and, like them, cannot exist without air, water, the productions of the earth, and the benign influence of the sun. Plants grow, ripen, fade, and die; and those laws of nature extend to animals, and even to mankind

If we next examine the varieties in the human species, what an astonishing assemblage of conformity and diversity! Human nature, at all times and among all people, is generally the same; and yet we find, that, of this innumerable multitude of men spread over the earth, each individual has a form peculiar to himself; particular talents and countenance, which, to a certain

degree, serve to distinguish him from any other. It seems as if the wisdom of the Creator chose to vary all his works, as far as was compatible with the essential construction peculiar to each species. All the creatures on our globe are divided into three classes—minerals, vegetables, and animals; and these classes are subdivided into genera and species. Hence it is, that there is no creature on earth alone, or without resemblance to its own species: there is no species which has not some connexion with others, or a general affinity with the rest of the world.

From this assemblage of uniformity and diversity, which is of infinite extent, the order and beauty of the universe are derived. The difference between the countries of our globe, evinces the wisdom of the Most High; who chose that each being should have its certain place, and has so fixed their destination, that it would be impossible to change the connexion or distinction subsisting between them. Even the minutest works of nature, such as only can be seen through a microscope, discover such union and variety together, as must necessarily raise our souls to the contemplation of the infinite wisdom of the Creator.

O Lord my God! thou hast regulated all with consummate wisdom, and hast arranged every thing for the general welfare of thy creatures. Notwithstanding the superficial manner in which I have considered thy works, my soul is filled with wonder and admiration.—What then would be my emotions, were I capable of penetrating more deeply into the essence of beings, in order to understand their harmonious structure. O that I may be truly thankful for the slight acquaintance with them which thou hast vouchsafed to grant me; and may I ever consider it as one of my first duties and greatest privileges to acknowledge thee in every object of nature! Soon will the landscape be adorned with all the variegated beauties of spring: O! that while I anticipate the blessing, my soul may rejoice under a lively sense of thy wisdom and matchless beneficence.

MARCH XV.

Seeds.

All vegetables spring from seeds; but the greater

number of these are not sown, and are even invisible to us. It is nature that disperses them.—With this view she has furnished some seeds with a sort of light down, or little feathers, which serve as wings for the wind to carry them away, and disperse them in various directions. Other seeds, though small, are heavy enough to fall perpendicularly on the earth, and to sink of themselves into it. Others, of a larger or lighter sort, which might be carried away by the gales, have one or more little hooks to catch, and prevent them from going too far from their place. Some are enclosed in elastic cases, which, as soon as they are touched, or acquire a certain degree either of dryness or moisture, burst asunder, and drive the seed to a convenient distance. And what is still more admirable, nature seems to have committed the business of sowing to certain birds, which deposite the kernels of the fruits they have eaten in a proper soil, where they take root, spring up, and flourish. Ravens have been seen to plant oaks in the following manner:—they make a hole with their bill, and drop an acorn into it, which they afterwards cover with earth and moss. It must not be supposed that they do this with an intention to plant trees; but they are led to it merely by instinct. They bury the acorn for their food: it shoots, and becomes an oak. Many seeds, by their agreeable taste and smell, invite the birds to swallow them; and thus transport them hither and thither, and render them fruitful by the heat of their bowels.—After having kept them for some time in their stomachs, they let them fall on the ground, where they take root, thrive, blossom, and produce new seeds.

Let us here admire the wise and tender care of Providence. If the sowing of seeds in meadows and forests had been entirely left to mankind, in what a bad condition would they have been! Observe how, at the return of spring, the grass and flowers spring up, and adorn the earth, without our having, in any degree, contributed towards it. Tender and merciful Father! how great is thy love towards thy creatures! and how admirable is thy wisdom!

But this is not all that is to be admired in respect to seeds. It is remarkable, that the whole plant, however large it may be, is all concealed in the narrow space of the seed. The whole trunk of the oak, its leaves,

branches, and roots, are already in the acorn. As the preservation and propagation of all species depends greatly on the seed, the Creator has taken care to protect it sufficiently. The plants which remain all the year in the ground, how carefully are their blossoms and seeds enclosed during winter in the buds, where they are well protected, and covered with close coats of a curious texture. As for those plants which cannot bear the cold winter, they are preserved under ground by their roots or fruit, till the mild warmth of spring causes them to bud again. Some seeds are lodged in the middle of the fruit; others in pods and shells; some in wooden sheaths and capsules. But every seed is protected and preserved in the manner most suitable to its nature. Creator of the universe! the minutest works of nature evince thy wisdom and goodness! At present, while the husbandman is occupied in depositing a variety of seeds in the earth, may I reflect that it is thou alone who canst sow the seed of righteousness in my heart, and cause it to bring forth fruit to the glory of thy holy name.

MARCH XVI.

On the Size and Distance of the Sun.

If we have never seriously considered the extreme smallness of our globe, and our own comparative insignificance in the scale of creation, we may be sensibly affected, both with the one and the other, by reflecting on that immense body which communicates light and heat, not only to our earth, but also to a multitude of other worlds. The sun is almost in the centre of the planetary system, and, in some degree, monarch of many worlds; for the primary and secondary planets are only worlds, which receive their light, heat, and motion, from the sun. This alone is sufficient to prove the prodigious size of that luminary; which is still more confirmed by its being visibly great, notwithstanding the immense distance it is from us. But there can remain no doubt, if we admit the calculations of astronomers; the result of which is, that the diameter of the sun is at least a hundred times larger than that of the earth: and, consequently, the globe of the sun must be at least a million of times larger than ours. Astrono-

mers vary in opinion as to its distance; but, the most accurate computation makes it about eighty-two millions of miles. This distance is perfectly suited to the effects of the sun, and its influence upon us. Some planets are nearer to it; but if our earth were in their situation, it would be reduced to ashes. Other planets are so remote, that, if our globe were at an equal distance, it would be enveloped in a frightful and perpetual darkness, and would be totally uninhabitable. We have reason, however, to believe, that those worlds which are more or less near the sun than we are, have been adapted by the Creator for inhabitants. Either their constitution or their atmosphere being different from ours, or the inhabitants being of another nature, are enabled to support the extremes of heat and cold.

But, perhaps, what has been said of the size and distance of the sun, may appear exaggerated; for our eyes can discover nothing so large as the earth we inhabit: it is to that we compare the sun, which is a million of times larger. It appears small to us at such a distance: and, thence, we are tempted to believe our eyes rather than our reason. If God had placed us on a planet, which, in comparison of the earth, was as small as the earth is in comparison of the sun, the magnitude of the earth would have appeared as improbable to us as that of the sun does now. It is not wonderful, then, that we should be struck with astonishment in reflecting on the size and distance of that body. But it was not merely to excite our *admiration* that God placed it in the heavens. This admiration should lead us to the great Being who is the Creator, the Guide, and Preserver, of the sun. In comparison of his greatness, the magnitude of the sun is but a speck: and its brightness but a shadow, compared to the dazzling splendor of the Lord. What must be the greatness, the power, and glory, of him who created the sun! Let us endeavour to pursue this idea: let us dwell on it, and we shall find it infinitely more incomprehensible than the size of the sun. If the earth be so small in comparison of that globe of fire, how inexpressibly little must it be in comparison of the Lord! If there be such immensity of space between the sun and the earth, what an inconceivable distance must there be between us and infinity! "Who is like unto thee, O Lord!—who can be

compared to thee!" No praise can equal thy greatness; no understanding, however sublime, can reach that height! O Thou, the life and light of every being, splendor, majesty, and glory, surround Thee! "Thou deckest thyself with light as it were with a garment." Let it be our constant employment to praise the Lord every time we feel the salutary effects of the sun, which is the master-piece of his workmanship. Let this testimony of the greatness of God, which we every moment feel, teach us how worthy he is to be adored; how tender the mercies with which he watches over us; and how greatly he merits our entire love and confidence! But, in admiring the sun, let us not forget to think of our Divine Redeemer, that Sun of Righteousness, who visited us in our distress, and whose light diffuses health and salvation. The effects of his grace are as necessary to our salvation, as those of the sun to our natural existence. We should inevitably have been plunged into a night of the deepest obscurity—a night of unpardoned sin and unpitied despair, had he not, by his incarnation, doctrines, and atonement, brought light, life, and righteousness into the world.

MARCH XVII.

The imperfect Knowledge we have of Nature.

Why has not the Creator given us faculties by which we might acquire a more profound knowledge of the corporeal world? The limits of our understanding, in this respect, seem ill calculated to accomplish the end designed. The Deity requires that we should contemplate his perfections, and magnify his name. But would not a more perfect knowledge of his works in creation be the true mean of becoming acquainted with his glorious attributes? And is it not reasonable to conclude, that a comprehensive view of all his wonders, an accurate perception of every part, and a discovery of all the laws and springs of nature, would best enable us to admire his greatness, and to celebrate his praise? If, at present, we admire the infinite grandeur of God, while our knowledge of his works is so extremely limited, how would our sentiments expand, how absorbed should we be in the contemplation of his attributes, and what pious awe would mingle with our adorations, were we capa-

ble of penetrating and explaining all the phenomena of nature!

This opinion, however, may probably be erroneous: at least, it is certain, that, since God has not thought proper to give us a more perfect knowledge of nature, we may glorify him more with our present powers, than we should do with those we are so anxious to possess. Ought we to be surprised, that, in our present state, we cannot discover the first principles of nature? The organs of our senses are too weak to penetrate into the source of things, and we cannot form to ourselves a corporeal idea of objects which our senses are not able to discern. Now, there are an infinite number of things in the world which our senses cannot distinguish. When we attempt to represent the infinitely great, and the infinitely small, in nature, our imagination is confounded. When we reflect on the swiftness of light, our senses are incapable of following such velocity; and when we try to form an idea of the veins and circulation of blood in those animals whose bodies are said to be a million of times smaller than a grain of sand, we feel, most sensibly, the weakness of our mental faculties. Now, as nature rises from the infinitely small to the infinitely great, is it wonderful that we cannot discover its true principles? But supposing the Almighty had endued us with such energy of thought, and clearness of comprehension, as would have enabled us to take in the universe with all its constituent and relative parts, so that we might have penetrated the most obscure recesses of nature, and discovered all its laws, what would have been the result? It is true, we should have had an opportunity of admiring, in its full extent, the wisdom of the Creator in his plan of the world: but this admiration would have been of short continuance, it being the nature of mutable beings, like ourselves, to admire things no longer than while they appear above their comprehension. Had we possessed a distinct idea of the whole system of nature, we might probably have thought ourselves capable of forming a similar plan, and, forgetting the immense distance between ourselves and the Divine Architect, we might have withheld, or neglected, the tribute due to his holy name. We have, therefore, no reason to complain of our imperfect knowledge of nature: but ought rather to bless God for it.

If the nature of things were more fully known to us, perhaps we should not be so sensibly touched with gratitude towards God as we are at present; nor should we enjoy so much pleasure in the contemplation of the varied scenes which surround us. But, at present, as we have only learned the first rudiments of the book of nature, we feel, not only the greatness of our Creator, but our own insignificance. Each observation, each discovery we make, fills us with new admiration of his power and wisdom: and our wishes naturally rise toward those blessed regions where we shall obtain a more perfect knowledge of his works.

MARCH XVIII.

Utility of Vegetables.

WHEN I consider the great number and variety of vegetables, I discover, as in every thing else, the beneficent designs of my Creator. What, indeed, could he intend by covering the earth with so many different herbs, plants, and fruits, but the advantage and happiness of his creatures? Plants are so numerous and diversified, that upwards of thirty thousand species have already been enumerated, and daily discoveries are constantly swelling the surprising list. Their increase, indeed, appears infinite, when it is considered that one grain of Indian wheat is capable of producing two thousand others; and that a single poppy seed, in two or three years, will multiply itself sufficiently to sow a large field. Such a prodigious increase of the vegetable tribes, together with their utility from the earliest ages, clearly demonstrates the design of the Creator, and ought to excite our gratitude for that provident care which has furnished us, in plants and fruits, with a wholesome, nutritive food, and which has rendered the vegetable kingdom so essentially useful to our comforts and conveniences, that we are, in a great measure, indebted to it for our clothing, furniture, and habitations

Every part of a plant is useful. The *roots* supply us with food, medicine, pitch, dyes, and all sorts of utensils; the *wood* is formed into buildings, furniture, and instruments, charcoal, and medicaments, and furnishes us with fuel in the rigorous months of winter; the *bark* is of particular use in tanning, as well as in the cure of

some disorders: and the *ashes* serve to fertilize and ameliorate the soil, to bleach cloth, and to make saltpetre. The *resin* is used in painting, and in the formation of pitch, tar, and balsams; *turpentine* is useful in medicine; *colophonia*, or hard resin, for varnishing and cementing, and for rendering the strings of musical instruments more sonorous; and *mastic* is a necessary ingredient in perfumes. *Flowers*, justly admired both for their beauty and fragrance, are useful in pharmacy, and supply the bees with wax and honey; and *fruits*, whether fresh from the trees, boiled, dried, or preserved, are grateful to the stomach and beneficial to the constitution. But it is not *man* alone to whom the vegetable tribes afford so many advantages; they are of still greater use to animals, most of which have no other food. Hence it is that fields and meadows are so numerous, and so richly clothed with a variety of plants and herbs, that the different animals may select such nourishment as is most suitable to their respective wants.

Where, O heavenly Father, can we find suitable expressions to celebrate thy goodness? Who can enumerate all the blessings the vegetable world affords us? It is, at least, manifest, that the arrangements thou hast made, in this respect, tend to the advantage of all thy creatures. Thou hast provided for the wants of every individual; thou hast assigned to each that which is most proper for its food and preservation; there is not a plant upon earth that has not its particular use and destination.

The verdant lawns, the flowery meads, the richly cultivated fields, are all calculated to inspire the soul with sentiments of gratitude and veneration. Here thy liberal hand has showered unnumbered blessings on thy needy creatures: here thou hast collected whatever is necessary for their support and comfort; and here each waving tree, each opening flower, each bending ear of corn, and every springing herb, combine to celebrate thy goodness! May I no longer remain insensible to their voice, but adore thee for all thy mercies, and henceforth repose implicitly on thy protecting care!

MARCH XIX.

The Construction of the Human Heart.

With what wonderful and inimitable skill is that mus-

cular body constructed, which is situated in the cavity of the breast, and is called the heart! Its form is something like an obtuse pyramid; and it is so placed that the point inclines a little to the left side. Its substance appears to be a series of fleshy fibres, interwoven in such a manner, that the external fibres extend from the left side of the heart towards the right, and the internal fibres from the right side towards the left. This substance has within it two cavities, called *ventricles*, separated from one another by a fleshy partition. Here is a vein which conducts the blood of the upper parts of the body into the right ventricle of the heart; another which brings back the blood from the lower parts into that same cavity; an artery which sends it from thence into the lungs; and another vein through which it runs from the lungs into the left ventricle, whence it is sent over the whole body through the great artery. On the side of the right ventricle is a sort of musculous bag, called the *auricle*, which receives the blood before it enters the right ventricle. Another auricle, not less useful, hangs at the left ventricle, that the blood may stop there during a new contraction. The heart is in perpetual motion, from the first to the last moment of our existence; and its contractions propel the blood, which is incessantly passing through it, to all parts of the body, and cause it to circulate through every vein. In a state of health it contracts itself at least sixty times in a minute, and consequently three thousand six hundred times in an hour; and at each contraction it throws out about two ounces of blood. The force exerted for this purpose must be very considerable, though neither its quantity, nor that of the blood propelled, can be accurately determined.

The structure of the heart, equally admirable and incomprehensible, demonstrates the absurdity of the supposition that it was formed without design, or that it might have been the production of blind chance. O thou eternal God! I here behold a convincing proof of thy matchless wisdom and power; and, filled with reverential astonishment, I cannot help exclaiming, How great is the Creator of men! How marvellous are his works, and how infinite is his magnificence!

May these sentiments continually occupy my mind whilst meditating on the admirable construction of my

body; and may I with every breath, if possible, praise and adore that Divine Being in whose hand are all the pulsations of my heart, and whose wisdom regulates the circulation of my blood! At his command the contractions and dilatations of the heart are arrested, the crimson fluid congeals in our veins, and the vital functions cease; for in Him alone we live, move, and have our being. O that my soul may be indelibly impressed with love and gratitude, and that I may consecrate my person, my services, and my possessions, to the Author and Preserver of my existence!

MARCH XX.

The Change of Seasons.

In the warmest as well as in the coldest climates, there are but two seasons which materially differ from each other. The coldest countries have a summer of about four months, during which the days are very long, and the heat excessive. The rest of the year may be considered as winter; for so rapid is the transition from oppressive heat to extreme cold, and from the most intense cold to violent heat, that spring and autumn are scarcely perceptible. The hottest countries have a dry and scorching season during seven or eight months, when the rainy season commences, and continues four or five months; this being the only distinction between their summer and winter.

It is only in temperate climates that there are four distinct seasons in the year. The summer heats gradually diminish; so that the autumnal fruits have time to ripen by degrees, without being hurt by the cold of winter. In the same manner, in spring, plants have time to shoot, and grow insensibly, without being destroyed by late frosts, or too much hastened by early heats. In Europe these four seasons are most perceptible; particularly in Italy, and in the south of France. By degrees, as we advance northward or southward, the spring and autumn are less distinct. From the middle of May to the 24th of June, it seldom rains; after which, the violent rains return, and continue to the end of July. The months of February and April are generally very uncertain. If the melted snow and rains remained on the ground, without falling away or eva-

porating, the water would annually rise in most places to the height of twenty-one inches. This change of seasons is peculiarly deserving of admiration. It cannot be attributed to chance; for, in fortuitous events, there can neither be order nor constancy: now, in every country throughout the world, the seasons succeed each other with the same regularity as the nights and days, and change the appearance of the earth precisely at the appointed time. We see it successively adorned with herbs and leaves, with flowers and fruits. Afterwards it is stripped of all its ornaments, till spring returns, and, in some degree, revives it. Spring, summer, and autumn, provide food for men and animals, in giving them abundance of fruits: and though nature appears dead in winter, that season is not without its blessings; for it moistens and fertilizes the earth, and, by that preparation, renders it capable of producing plants and fruits in due season.

Awake, O my soul! to praise and bless thy God and Benefactor. It is now that charming season recommences, which opens such an agreeable prospect, and makes amends for the sad winter days that are past: the spring approaches every day, and with a thousand pleasures and innumerable blessings. How many have wished to live to see this renewal of nature, and to recover, in the fine days of spring, from all they had suffered during winter; but they have not had the consolation to see this day, and their lives were ended before the winter was over. More favored than many millions of my fellow-creatures, who have been carried off by death, I still live, and may indulge the joy with which spring inspires me. But how often have I witnessed the return of this season, without thinking of the goodness of my Creator, without opening my heart to gratitude and love! Possibly, this is the *last* spring I shall see upon earth! perhaps, before the vernal equinox returns, I shall repose in the silent grave! Let this thought lead me to appreciate the happiness now granted me; to be the more sensibly touched with the goodness of my Creator; to enjoy, with more circumspection, the pleasures of spring; and to redeem, with more care, every moment of this transitory life.

There is another reflection which this subject may give rise to. As the seasons succeed each other in na-

ture, so do they in the course of our lives; but with this difference, that those which are past never return. The spring of my youth, which beauty, sprightliness, and the graces, attended, is already past; the summer and autumn of life, seasons in which I ought to show fruits of maturity to the world, are rapidly approaching; and it is very uncertain whether I shall attain the winter of old age.—Perhaps I may die in the vigour of life. Thy will be done, O Lord! Provided I persist, to the end, in faith, virtue, and piety, my life (however short) will be sufficiently long and happy.

MARCH XXI.

Several Things which appear to be of no Use.

If there be a wise providence which governs the world, it must extend even to the minutest things, and the most trifling events, in order that nothing under its agency may occur without manifest utility. Some discontented being may reply, "But, how many useless things are there in the world! The north wind blasts and disperses the blossoms of the trees, which wither and become useless. Seeds, which might have produced new plants, perish without yielding fruit. Innumerable multitudes of insects are not only of no use, but are even hurtful to man, to beasts, and to vegetables. Many men and animals only show themselves upon the earth, and suddenly disappear: others are born deformed and monstrous, or become impotent. How many faculties and talents are lost for want of an opportunity to make use of them: how many good projects and useful undertakings fail before they arrive at maturity! Could all this take place, if a Being infinitely wise governed the universe?"

But have you, who thus presumptuously question God and his providence, a sufficient knowledge of all things, and the relations they have among themselves, to be able to say what is really injurious, or absolutely useless? Rather, while reflecting on the weakness and narrow limits of the human understanding, learn the duty of respectful silence, and admire those works of the Lord, whose wisdom is demonstrated in an infinite number of things, the utility of which is so manifest as to be universally known and acknowledged. Let it also be con-

sidered that a thing may be useful in different ways, but that, while it serves one purpose, it cannot, at the same time, serve another. The insect, which, at its birth, becomes the prey of the swallow, cannot certainly produce a new generation: the efforts made by the alchymist to find the philosopher's stone have not succeeded in making gold more plentiful: but the insect is at least useful, in serving as food for the swallow; and to the experiments of alchymists we are indebted for many valuable discoveries. Our tears cannot soften the severe and cruel man, who abuses his power to oppress the weak; but, though our intercessions in favor of a miserable person prove useless, our tears will not be lost—they serve to keep up the sensibility of our hearts; and there is a Being who will collect those precious gems, to ornament that crown which will one day be placed on the head of the merciful. Let us, therefore, never suppose there is any thing in the world entirely useless. There may, indeed, be certain things which appear not to answer the purpose intended; but they undoubtedly fulfil the purpose proposed by God, and in the very way he determined. There may be also cases in which God appears not to have perfectly attained the end he proposed. But in order that certain things may take effect, and be realized, it may, perhaps, be necessary that others should, in some measure, fail, or be defective.—And if it be incontestible that true wisdom does not merely attend to the present, but carries its views to futurity; if God be infinitely wise, and his wisdom must be shown to the world as in a mirror; there must necessarily happen certain things, which, separately considered, appear not to fulfil their design, because they cannot do so but in connexion with others. The share that these things have in the execution of the whole plan, may be so imperceptible, and so little known, as entirely to escape our observation. But surely it does not follow that they do not in reality contribute to it. We must, on the contrary, conclude that God would not be infinitely wise, and that he could not act on a well-formed plan, if there did not often happen things which appear to us useless.

This persuasion will contribute very materially to our peace and happiness. Every day events occur in nature, and in the course of human life, which, being in-

comprehensible to our understandings, appear useless and without design; and it is perfectly natural that those things which weaken our confidence in the Almighty, should be disagreeable and distressing to our minds. But the more we are convinced by reason, daily experience, and the declarations of holy writ, of the goodness of God, and the wisdom of his government, the more contented and tranquil we shall be, either in prosperity or adversity. It will then no longer be difficult to acknowledge that, in every thing which he does or permits, he proposes to himself infinitely wise ends, which are always, in one way or another, beneficial to mankind. If we see many apparently useless things, many events which appear inexplicable, or even entirely contrary to God's plan, far from finding fault, we shall adore his wisdom, and render due glory to his name. He has never been mistaken in the government of the universe. All he does, all he permits, is still justified by the event. Let us then refer it to his wisdom, and ever trust to it, without having the temerity to criticise his dispensations. Such submission and such dependence are the only means of tranquillity here, and happiness hereafter.

MARCH XXII.

Harmony between the Moral and Physical World.

The wisdom of God has established a great affinity between the world and its inhabitants, to show that the one was manifestly made for the other: nor can it escape our observation, that a mutual connexion and perfect harmony subsist among all the works of our Creator. Human nature and the surface of the earth have very near relations to each other, and a striking analogy. As the bodies of plants and animals form, grow, arrive at maturity, and perish; so are men subservient also to similar laws. As there is a great diversity of climates and soils, some barren and others fruitful; so is there similar variety in the minds, talents, and faculties of men. Such has been the plan of the Creator; and there is in this variety more goodness and wisdom than we think of at first sight. Far from appearing defective, we should find it all perfection, if we had a thorough knowledge of things. Should any one

inquire why the Almighty has not given the same faculties, and the same degree of understanding, to all mankind; we might answer, Who art thou, blind and weak mortal, that darest to question God on what he has done? Shall the creature say to the Creator, Why hast thou made me thus? We might as well ask, Why has not God ordained that all the kingdoms and countries on earth should be equally agreeable and fruitful? Why in certain places is the soil so rich and fertile, while in others it is so barren and ungrateful, that all attempts to improve it are completely thrown away? Let us not doubt that this diversity is extremely proper, and worthy our admiration, though not always conformable to our way of thinking. The most barren and desert countries have their use and beauty in the eyes of the Creator. The same may be said of the most savage and uncultivated nations: all hold their proper places in the immensity of created beings, and their variety serves to declare the infinite wisdom of God.

But as it is evidently the intention of Divine Providence that the earth should be cultivated, and produce abundance of fruits for the preservation of men and animals; and as it is for the same purpose that God has given us corn to sow in the ground; so also, and with more reason, does his wisdom require that human nature should be cultivated, and that our souls should be made fruitful, and enabled to yield an excellent harvest of virtue and piety. It is with that design that he has given to mankind lessons of true religion; which, if they find a soil well disposed to receive them, produce exquisite fruit, like the corn that is sown in fertile ground. Hence also it is that the Gospel appears to produce its effects in proportion to the natural faculties of men, and the dispositions with which they receive it.

There are many tracts of country, even in our day, which remain barren and uncultivated, although Providence denies them none of the blessings which might contribute to their fertility. It is thus that multitudes of human beings remain in ignorance, notwithstanding the publication of the Gospel; and even among the most polished nations of Christendom, the efficacy of that divine revelation is, and ever will be, very different, according to the diversity of characters to whom

it is preached. Some do not comprehend it, and have no sense of the salutary virtue of the truths of our holy religion. Others receive those truths with eagerness and joy, but these impressions are of short duration. With others the passions and cares of the world stifle the divine word. Finally, there are some (but these form the smallest number), who receive it in an honest and upright heart, with conviction, contrition, and sincerity. To these alone it becomes "the power of God unto salvation."

But to which of these classes do *I* belong? What impression has the doctrine of salvation made upon *my* soul? What fruit has the good seed of the Gospel produced in *my* heart? These are questions which my conscience ought to answer honestly and sincerely; but of which my conduct through life will be the best proof.

MARCH XXIII.

The Nature and Properties of Air.

Air is that fluid and subtile body which surrounds our globe, and which every living creature respires. Although it is so near us that it surrounds us on all sides, and we continually experience its effects, our knowledge of its true nature is very imperfect. We know, however, that it is a corporeal substance; for when we pass our hand rapidly through it, we find a sensible resistance: and we are certain that it is a fluid, and that its particles do not cohere, but pass easily over one another, and by this means yield to every impression. If it were otherwise, we could neither breathe nor go through it with facility.

Gravity is a property common to the air as to all other bodies; for although it is about 816 times lighter than water, its weight is nevertheless very considerable. The force with which air weighs on any surface of a foot square, is equal to 2160 pounds; and a man whose surface is about fourteen square feet, supports continually a mass of atmospheric air of 30,240 pounds weight. This, perhaps, may appear incredible: but the resistance of the air which is within our bodies, prevents our feeling the pressure of the external air;

for the air contained in the human body preserves an equilibrium with that which surrounds us on all sides.

The *elasticity* of the air is no less certain: it continually endeavours to extend itself into a larger space; and though it may be easily compressed, as soon as the pressure is removed it immediately expands. Fire and heat show this property in the air; and by means of these it may be made to occupy a space five or six hundred thousand times greater than what it occupied before, without losing any of its elastic force by this prodigious dilatation.

These are phenomena highly worthy our admiration; and in them we find the causes of many astonishing effects. It is in the air that our globe is supported, and those clouds are collected which exhibit so many beautiful forms and colours, and which, as they are rarefied or condensed, suspend the vapours, or pour them in rain, hail, or snow, upon the earth. Without the air our senses would be of no utility, animal life could not be supported, and neither fire nor water could exist.

Thus we perceive that *air*, like all other created objects, proclaims the grandeur, power, and goodness of God; and to his matchless wisdom we are indebted for this element, and its adaptation to so many different uses. He who creates and governs the rain, the snow, the winds, the thunder, and the lightning, displays the riches of his wisdom in the whole economy of nature, and calls upon mortals to admire the wonders of his hand. How wisely has he ordained the quantity, gravity, elasticity, and motion of the air! and how mercifully has he ordained it to contribute to the comfort and welfare of his creatures! Is it possible for us who respire this element, and who derive so many advantages from it, to be ungrateful to the divine Author of the blessing? Conscious that such ingratitude would render us unworthy the air we breathe, let us resolve, with the inspired Psalmist, to sing unto the Lord as long as we live, and to praise his name as long as we have any being.

MARCH XXIV.

There is Nothing new under the Sun.

It is certain that, in respect to us, many new things

occur upon the earth. The aspect of nature is annually changed, and each succeeding spring and summer present us with new flowers to embroider our fields, and new fruits to enrich our gardens and orchards. Each day brings new events and new revolutions. The situations of objects change daily, or rather present themselves to our senses under different forms. But it is only relatively to our limited understandings and knowledge, that it can really be said there is any new thing under the sun. Nothing is more certain than the saying of Solomon, that, "What has been will be, and what has been done will be done, and there is nothing new under the sun." God, whose wisdom is infinite, has not thought proper to multiply beings unnecessarily: there are as many as our wants, our pleasure, or our curiosity require. We cannot even gain a superficial knowledge of all the works of our Creator; much less are we able to exhaust them. Our senses are not refined enough to perceive all that God has formed; nor are our understandings sufficiently strong to conceive a perfect idea of all created beings: we therefore sometimes imagine that there are many new things under the sun; for, as the whole creation is immense, and as we cannot take in all its parts at one view, we fancy that each point we perceive for the first time, is new, because every part of the world exhibits a wonderful variety and diversity. Nature does not require a continued and endless creation: it is enough that the Supreme Being should preserve the order which he established at the beginning. God is an artist who has no need of a number of springs to vary his works; for, though they succeed each other, and return with the greatest regularity, they are so infinitely diversified as to appear always new. Let us be content to enjoy with gratitude the things he has created, without undertaking to fathom their depths, or attempting to comprehend their vast extent.

The impossibility of our enumerating all the objects of the creation is, in some sort, the seal by which we may conclude that the world is the work of God; and it, at the same time, affords an incontrovertible proof of the weakness of our understandings. But have there not been discoveries made lately, which were formerly entirely unknown? Do not all the kingdoms of na-

ture now present phenomena to us of which our ancestors had no idea? To such interrogatories it may be replied, that these discoveries are rather the result of our wants than of our sagacity. In proportion as our wants become multiplied, new *means* were necessary to supply them, and these were kindly furnished by our provident Creator: but we ought to recollect that the means *existed* before we discovered them. Those minerals, plants, and animals, with which we have recently become acquainted, had an existence in the bosom of the earth, or on its surface, before the researches and labours of men placed them before our eyes. Besides, it is extremely probable that many objects which we arrange in the catalogue of new discoveries, were not altogether unknown to the ancients. If the world were the work of chance, we should occasionally discover new productions. Why do we not see new kinds of animals, plants, and stones? It is because all has been planned by the wisdom of God. What he at first ordained is found sufficient for our convenience and use; and all his works are so perfect, that none of them require to be renewed or created again. Nothing was made by chance; all events have been determined by infinite wisdom, and are linked together in one chain. The whole fabric of the world is preserved by the providence of its Creator, and by the concurrence of general and particular laws. Every object in the empire of nature is stamped with wisdom, order, and greatness. In all, and by all, God is praised and magnified. To him be glory, now and for evermore.

MARCH XXV.

Caves in the Mountains.

Caves are generally found in mountains, and seldom, or not at all, in plains. They are formed, like precipices, by the falling in of rocks; or, like an abyss, by the action of fire. Caves, therefore, may be formed by the same causes which produce the quaking, opening, and falling in of the earth; and these causes are the explosion of volcanoes, the action of subterraneous vapours, and earthquakes: for they make disorder, and throw down buildings; which must necessarily form caves, holes, and chasms of every description.

But why are these caves? Of what use are they? Suppose even that *we* could discover no use in them, we ought still to be convinced that they were formed for wise purposes. For as nothing on the earth is really useless, these caves must, of necessity, have their uses; and it is not very difficult to ascertain the end they are designed to answer. Here the waters are collected, which are afterwards diffused over the earth to supply a deficiency of rain. The caves in the mountains keep up the course of the waters in subterraneous canals; which is an object of great importance: for as soon as that circulation is stopped, shocks and earthquakes ensue, which spread terror and desolation over the globe. The air, contained and confined within the earth, escapes through dens and caves. These openings, therefore, are indispensably necessary, that the air may penetrate into the mountains, to give a passage to the winds, and a vent to exhalations; for, if the apertures in caves did not admit a free circulation, the air contained in them would corrupt, or would occasion tremors and concussions of the earth. These caves often fill with water, whence rivers and lakes are afterwards formed. Such is the lake Zirchnitzer in Carniola, which fills at certain times, and at others dries up, or is lost under the neighbouring mountains, in such a manner, that it is sometimes navigable, and at other seasons may be ploughed. How many animals would perish, if the excavations of the mountains did not serve them for asylums and retreats during winter! Were there no caves, we should be deprived of several minerals, and many other useful productions, which cannot be formed, or become perfect, but in subterraneous caverns.

We see, then, that, even in this respect, the wisdom and goodness of our Creator are evidently manifested: and we have an additional proof that there is nothing useless in nature, nothing too much, nor any thing which is not ordained with wisdom, and for the general good. The more we employ ourselves in such researches, the more we shall adore the matchless perfections of God. Let us therefore enter more deeply into these sublime meditations; and while we admire the various phenomena which we discover on or under the earth, let us adore and celebrate the power and goodness of their Divine Author.

MARCH XXVI.

Circulation of the Sap in Trees.

The trees, which for several months appeared entirely dead, begin insensibly to revive; and in a few weeks we shall discover more evident signs of life; as their buds will then become larger, and gradually expand their precious blossoms. We have it in our power to observe this revolution in the beginning of each spring; but, perhaps, have been hitherto ignorant by what means it operates. The effects we observe in spring, in trees and other vegetables, are produced by the sap, which is put in motion by the air and increase of heat. As the life of animals depends on the circulation of their blood, so also the life and growth of plants and trees depend on the circulation of the sap. For this purpose God has formed and disposed all parts of vegetables, so as to concur towards the preparation, preservation, and circulation, of this nourishing juice.

It is chiefly by the bark, that the sap in spring rises from the roots into the bodies of trees, and even conveys, throughout the year, all the nourishment to the branches and fruit. The woody part of the tree is composed of small longitudinal fibres, which extend in a direct line the whole length of the tree, from the root to the top, and are very closely joined together. Among these fibres some are so small and fine, that one of them, though scarcely as thick as a hair, contains more than eight thousand fibrillæ. An innumerable multitude of little tubes, which contain the nutritious juice, and facilitate its circulation, extend through all the branches, and ascend to the very top of the tree; some conducting the sap from the root upward, and others returning it back again. The sap rises through the ascending veins in the heat of the day, and comes down the others in the cool of the evening. The leaves serve for the same purpose; and their chief use is to make the sap circulate; not only that which proceeds from the root, but also what the tree receives outwardly, by means of dew, rain, and the moisture of the atmosphere. Thus this nourishing juice appears to be spread through every part of the tree: but it could not rise through the tubes, if there were not openings in them at the top.

It is through these pores that the watery parts of the sap evaporates; while the oily, sulphureous, and earthy particles unite together to nourish the tree, transform themselves into its substance, and give it a continual increase. If the juice do not reach it, if the circulation be stopped, or if the interior organization be destroyed, whether by intense cold, frost, age, wounds, or any external injury, the tree dies.

After these reflections, can we regard the trees at this season, with the same indifference as formerly? Will the change about to take place in them appear so little worthy our notice? and can we observe the renewal of all nature, without thinking of that *God*, who gives life to every creature; who provides juices analogous to trees; who communicates to the sap the power of circulating through the veins, and of giving to trees life, nourishment, and growth? Alas! that it should be possible to see all these things every year, without giving proper attention to them! At the return of many springs I have had the opportunity to observe this quickening virtue which appears in plants and trees: but I have thought no more about it than the animals which graze in the fields; and, what is still more wonderful, I have been equally inattentive to the preservation of my own life, the growth of my body, and the circulation of my blood! As I have the happiness of again beholding the vernal season, may I contemplate its objects in a more reasonable and Christian manner; and may I gratefully acknowledge in the works of nature, that adorable Being whose greatness and magnificence are proclaimed by all his creatures. But all my wishes will be utterly fruitless, if the Lord himself who is the God of all mercy, do not incline my heart to acknowledge and glorify his great and holy name. Now, that all nature revives, grant O God, that my soul may be quickened by thy Spirit. May the new existence, which the vegetables receive at this lovely season, be a signal to awaken me from my slumber, to allure me to virtue, and to excite me to lead a life of spiritual activity agreeable to thy blessed will.

MARCH XXVII.

Our Ignorance of Futurity.

If we are ignorant of future events, we must not seek

the cause of it merely in the nature of our souls—the faculties and knowledge of which are very limited; but also in the express and infinitely wise purpose of the Creator. He knew the strength of man, and he would not give him more knowledge than he was able to bear.

Knowledge is to the soul, what the light of the sun is to the eyes:—too great a degree of splendor would prove injurious, without being useful. It would be very dangerous to the virtue of man, if he had the faculty of foreseeing what was to happen to him; for outward circumstances have generally some influence on our mode of thinking, and on the resolutions we form. In proportion therefore as we might become acquainted with the secrets of futurity, our temptations would be multiplied, our virtue would be exposed to danger, and our lives rendered miserable.

Supposing that future events should all be pleasant and felicitous, it may be remarked, that while we do not foresee this greater happiness which awaits us, we enjoy with gratitude the present advantages we possess; but were the curtain of destiny drawn aside, and future blessings exhibited to our view, we should immediately cease to enjoy the present: we should no longer be contented, happy, or grateful; we should anxiously and impatiently expect the fortune designed us; and our days would pass heavily, and without enjoyment. If, on the other hand, future events were to be gloomy and afflictive, our foreknowledge would only serve to give us an antepast of sorrow, and to render us completely wretched in expectation. Days which might have been spent in peace and tranquillity, had the future been concealed, would be spent in painful anxiety, and depression of mind. In a word, the idea of the misfortunes reserved for us, would prevent our enjoying present happiness, and would make us insensible to it. How great, therefore, is the wisdom and goodness of God, in having thrown a veil over futurity, and only letting us know our fate by degrees, as the destined events occur! Let us never wish to anticipate the happiness which awaits us, nor to feel the weight of misfortunes before they happen: let us, on the contrary, every time we think of futurity, bless our Creator, that our ignorance of it has spared us so many cares, fears, and sorrows. Why should we wish to see through the

veil which covers futurity? If we be certain of a reconciliation with God through our adorable Redeemer, we may also be certain, that all future events, whether pleasing or painful, will infallibly contribute to our real welfare. And is it not a merciful and gracious God who directs all events, and who rules futurity? He sees at once the whole course of our lives; not only the past, but even what is to come, as far as eternity itself. When we lie down to sleep, let us recommend ourselves to the care of our heavenly Father, without troubling ourselves about what may happen in the night; and when we awake, let us trust in him, without being anxious for the events which may mark the day. In the midst of the dangers which surround, and the misfortunes which threaten us, let us remember the goodness of God, and rest assured that he will either remove them, or turn them to our advantage. And though we do not know what evils await us, we need have no anxiety on that account; for God is acquainted with them, and will assuredly enable us to bear them, by his divine support and assistance. To this wise and merciful Disposer of all events, therefore, we may commit ourselves, and all our concerns, with the most unbounded confidence.

Whatever Omnipotence has decreed in respect to us, must necessarily happen: it is the portion allotted, and proper for us. The cup that is presented, let us receive willingly, and without murmuring, convinced that it is for our good. Let us resign ourselves to the Lord, and depend upon him entirely for whatever he may please to decree as to the circumstances of life or death. Whether we live or die, the joys of paradise will constitute our portion and inheritance. Let this thought tranquillize our souls, and induce them to submit, on all occasions, to the will of our Creator. Be calm, then, my soul. Our glory is to submit to the will of our Creator. He is our heavenly Father, and will safely guide us, through all dangers, to the happiness allotted for us.

MARCH XXVIII.

The gradual Approach of Night.

NIGHT, in itself, is a blessing from the Creator; and the ordination of its gradual approach is equally replete

with wisdom and divine beneficence. A sudden transition from the light of day to the darkness of night would be both inconvenient and terrific. So rapid a change would occasion a general interruption to the labours of man; which, in certain affairs necessary to be finished, and not admitting of delay, would be extremely prejudicial; men and animals would also be overwhelmed with consternation, and the suddenness of the transition would seriously injure the organs of sight. Darkness, therefore, is not permitted to surprise us suddenly, but advances by slow gradations, and the twilight which precedes it, affords us time to complete our most pressing business, and to make the requisite arrangements; so that the approach of night does not materially interrupt or incommode us.

But whence proceed those remains of light, which, at the end of each day, in some degree temper and soften the melancholy appearance of night? We no longer see the sun, and yet we are cheered by a portion of its lustre. Let us, in this, admire the wise and beneficent arrangements of nature. The atmosphere which surrounds us has been so formed as to render us this essential service. The rays of the sun which are projected on the superior surface of the atmosphere, do not continue their course in a direct line, but are bent; and this leads them whither their first direction would not have carried them. The atmosphere, having thus bent, and turned back a great number of rays which otherwise would not have reached us, reflects them afterwards to our sight; and, by this means, we enjoy light much longer, and the time for labour is considerably prolonged.

Thus a gracious Providence has planned, not only the great revolutions of the seasons, but also the daily transition from light to darkness, in a manner the most advantageous to us. Let us, therefore, gratefully acknowledge the goodness of our Creator, and adore his wisdom in this beneficial arrangement. The gradual approach of night, in the inanimate part of the creation, should lead us to reflect on the evening of life: *that* also comes on by degrees, and we shall be almost imperceptibly surrounded by the shades of death. God grant that the great work we have to do may then be happily ended; and that we may have fulfilled our allotted task.

We must work while it is yet day; for the night cometh in which no man can work.

MARCH XXIX.

The Magnificence of God in his Works.

Why is such magnificence displayed in the works of the Creator? Why do we discover, on all sides, innumerable objects, each of which appears to exceed in fascinating and attractive splendor, while each possesses charms peculiar to itself? And whence is it that we continually find new subjects of wonder and admiration? It is, doubtless, that we may incessantly admire and adore the great Being, who is infinitely more beautiful, more sublime, and more magnificent, than all we discover in nature: it is, that we may continually say to ourselves,—If the *works* are so complete, what must the *Creator* be? If such be the beauty of creatures, what must be the inexpressible beauty, the infinite greatness, of Him who beholds, with one glance, the whole creation? if the brightness of the sun dazzle and confound our sight, we may naturally conclude that He who lighted up that glorious orb, dwells in light inaccessible, where no mortal eye has seen or can behold him. We cannot suppose he is less wonderful than the creatures he has formed; and the more striking and marvellous his works, the more worthy of admiration is his own Divine Nature. Could we thoroughly comprehend his greatness, he would not be a God, or we should not be men. How, then, can we better enlarge our minds, and accumulate a treasure of ideas, than in contemplating that God, whose grandeur and magnificence are altogether unlimited? Is it not in such contemplations that the faculties of our souls may best acquire that force and energy which will make us capable of enjoying infinite happiness? The more extensive our knowledge here, and the more our minds are enlarged in the contemplation of the greatest of all beings, so much the more we shall be able to comprehend him in a future state. Let us, therefore, always divide our attention between God and nature; but only in order to consider in the latter, as in a glass, the image of that Being whom we cannot contemplate face to face. Let us collect the various beauties and perfections which

are scattered over the vast empire of the creation; and when their innumerable multitude strikes us with astonishment, we shall say to ourselves, that, compared with the perfections of their Creator, they are less than a drop to the ocean. Let us consider in created beings, what is amiable and lovely, abstracting what is finite and limited, in order to form a more just and proper idea of the excellence of the Ruler of the universe: and, when the faults and imperfections of his creatures may have lessened our admiration of their beauty, let us exclaim, If the creation be so beautiful, notwithstanding its defects, how great and worthy of admiration must He be, whose splendor is without spot, more pure than light itself, and more brilliant than the meridian sun!

O my soul! collect all thy powers to devote thyself entirely to the contemplation of the adorable God. Take no rest till thou hast begun to soar toward the boundless perfections of Him who is raised infinitely above the most perfect of creatures. Let it be thy principal study to acquaint thyself with this supreme and matchless Being: because this is the only knowledge that can satisfy thy desires, fill thee with a tranquil joy which nothing can disturb, and even give thee an antepast of that more perfect knowledge with which thou wilt be blessed at the foot of his throne, and which will constitute thy felicity to all eternity.

Yes, my gracious God and King! I will bless thy holy name with all my powers on earth, and will celebrate thy praise for ever and ever. I will proclaim thy magnificence, and thy wonderful works, that men may acknowledge and admire the prodigies of thy power and goodness. My lips shall sing thy praises, that my brethren may bless thy name both now and for ever.

MARCH XXX.

The Arrangement of the Seasons in the other Planets.

The diurnal rotation of the earth on its axis, and its annual course round the sun, are productive of the greatest blessings, and naturally lead us to conclude that the other planets possess similar advantages. All of them, except *Mercury*, have been observed to turn round their axes, and in all probability *he* is subject to

the same general law, though his motion has not yet been discovered. All the planets move in their orbits round the sun; and even the secondary planets take the same course round their primaries. Now, as the diurnal motion of our earth produces the constant vicissitudes of day and night, and its annual motion the change of seasons, it is highly probable that the same things occur in the other planets. Venus turns round on her axis in twenty-three hours and twenty-two minutes; Mars, in twenty-four hours thirty-nine minutes; Jupiter, in nine hours fifty-six minutes; Saturn, in ten hours; and the moon in twenty-eight days. If, then, we divide the day, that is, the time during which these revolutions are made, into twenty-four equal parts, each of which is called an hour, the hours of Venus will be a little shorter, those of Mars rather longer, and those of Saturn and Jupiter not half so long as in our planet; whilst those of the moon will each be more than equal to one of our days. It is also to be remarked, that the position of the axis of each planet is inclined, like that of our earth; whence it naturally follows, that, during their course round the sun, their northern side is sometimes more, sometimes less enlightened. Is it not, therefore, probable, that, in all the planets, the revolutions of seasons, and the alternate length and shortness of days, take place, as on our earth.

Should it be asked, To what purpose are all these reflections? it may be replied, They would be useful if they only served to increase our knowledge; but they will appear still more important, if we think of the consequences resulting from them. May we not conclude, that the other planets are also inhabited by living creatures? All the planets are like the earth. They are alike warmed and illuminated by the sun; and have their nights and days, their summers and winters. But of what use would all this be, if they were not inhabited? What an idea should this give us of the greatness of the Creator! How immense are his dominions! and how impossible to fathom the wonders of his power and goodness! When we reflect on these worlds, where his glory displays itself as much, and perhaps more, than on our globe, we must be struck with astonishment, and adore him with sentiments of the most profound veneration.

Though the inhabitants of our earth should remain ungratefully silent, the praises of Jehovah would be celebrated in all those worlds which roll above our heads. O! let us join our hymns to theirs, and celebrate our God with endless thanksgivings. Let us invite all creatures who, like ourselves, have proceeded from his hands, to magnify the Most High, and to render the honors due to his holy name.

MARCH XXXI.

The paternal Care of Providence for the Preservation of our Lives in every part of the World.

We know, at present, a great part of our globe, and new regions continue to be discovered from time to time; but no place has yet been found, where nature does not produce the necessaries of life. We know countries where the sun burns up almost every thing; where little is to be seen but mountains and sandy deserts; where the earth is almost entirely stripped of the verdure with which it is so richly adorned in our climate. There are other countries which are scarcely ever cheered by the rays of the sun; where an almost continual winter benumbs every thing; where there is neither culture, fruit, nor harvest. And yet there are men and animals there, who do not fail of subsistence. The productions denied them by Providence, because they would have been burnt by the sun, or frozen by the severe cold, are supplied by gifts more suitable to those climates, and on which both men and animals can subsist. The inhabitants carefully seek what nature has provided for them, and know how to appropriate it, so as to obtain all things necessary to their subsistence, or essential to their convenience.

In Lapland, Providence has contrived, that an evil, in some respects very inconvenient to the inhabitants, becomes a mean of their preservation. That country is infested with innumerable swarms of gnats, from which the Laplanders defend themselves by keeping up a continual smoke in their huts, and by daubing their faces with pitch. These insects deposite their eggs on the water, and, by that means, draw a great number of aquatic birds, which feed on them, and which being afterwards taken by the Laplanders, become themselves the chief food of those people.

The Greenlanders generally prefer animal to vegetable food; and, it is true, there are very few vegetables in that barren country. There are, however, some plants of which the inhabitants make great use; particularly sorrel, angelica, and scurvy-grass, or cochlearia. But their principal nutriment is a species of fish called angmarset, which nearly resembles the miller's thumb. After these have been dried in the open air upon the rocks, they serve instead of bread or greens; and are preserved for winter in great leathern sacks. In Iceland, where there is no agriculture, owing to the severe cold, the people live on dried fish instead of bread. The Dalecarians, who inhabit the northern parts of Sweden, having no wheat, make bread of the bark of birch and pine, and a certain root which grows in the marshes. The inhabitants of Kamschatka feed on the stalk of the acanthus, which they eat raw, after having peeled it. In Siberia, they make much use of the roots of mountain-lily, which they call martagon.

Adorable Father of mankind! such are the tender mercies of thy providence for our preservation! With what goodness hast thou spread over the whole earth that which is requisite for our subsistence! Thy wisdom saw, before the foundation of the world, the dangers to which the lives of mortals would be exposed, and ordained that we should every where find sufficient food. Such relations, connexions, and communications were formed, by thy decree, between the inhabitants of the earth, that people who are separated from one another by vast seas, labour for their mutual subsistence and convenience. Can we sufficiently admire and revere the divine wisdom, which has given us bodies so formed as not to be confined to any particular food, but to be able to make use of every kind of aliment? Thus, by a goodness which cannot be too highly praised, man does not live by bread alone, but by every word, or appointment, which proceeds from the mouth of God;—that is, by every thing he has ordained nature to produce, and to which he has given a nutritive quality. To him all creatures turn their eyes, expecting to receive proper nourishment; and when he opens his hand, he liberally supplies their wants. Merciful and compassionate Father! enable us to adore thee, with our latest breath, for the numerous blessings, and

means of subsistence, which thy goodness has provided for us!

Hymn for the Commencement of Spring.

Blessed be the Lord who has created the spring, and richly adorned the face of the earth! To him be ascribed all glory, honor, and power, for he mercifully provides for the felicity of all animated beings. The God who created, also preserves and blesses the works of his hands: Celebrate his praises all ye creatures!

In those happy days, when man had not yet rebelled against his Maker, free from sin and its dreadful consequences, the earth resembled a paradise; and even now, though sadly deformed by the effects of transgression, it exhibits the hand of its Divine Author, and is still the entrance to heaven.

The fields, which recently appeared dead and cheerless, now begin to revive and bloom; each succeeding day produces new blessings; and quadrupeds, fowls, and reptiles seem to rejoice in their existence. The face of the earth is, in fact, renewed; the sky is cloudless and serene; the mountains, groves, and valleys, resound with melodious warblings: and the Lord of the creation looks with an eye of mercy upon all his works.

The verdant fields, the embroidered meads, and shady groves, however attractive in themselves, are still destitute of intelligence, and the irrational part of the creation are unacquainted with the Being who formed them: *man* alone rejoices in his God, is conscious of his existence, and aspires to live eternally in his presence. Let us therefore celebrate the God of nature, who is nigh unto us, even at the moment that adoring legions of angels fall prostrate before his exalted throne: —he is present every where; in heaven, on earth, and in the seas. Let us incessantly glorify him and sing his praise; for at all times, and in all situations, he is near us by his power, his love, and his matchless bounty.

It is God who commandeth the clouds to extend themselves over the fields, and to pour down their fertilizing showers on the thirsty land, that man may be enriched by his gifts. At his mandate, also, the hail, the winds, and the dew, become sources of happiness.

to the human race. Even when the tempest rises, and the pealing thunder appals the heart of man, fertility and blessedness spring from the bosom of storms and darkness. The sun revisits us with increased splendor; and the terrific claps of thunder are succeeded by songs of joy.

God is the only source of true felicity, and all our happiness originates in him who enables us to draw the blessings of salvation from the eternal springs. Blessed is the mortal, therefore, who submits with resignation to his holy government, and who is prepared to leave this world in the joyful hope of being united to his Father and Creator, by the redeeming love of Jesus Christ!

APRIL I.

Abuse of Animals.

The abuses of animals are so frequent and various, that it would be almost impossible to enumerate them. They may, however, be chiefly confined to two points; that of too much, or too little, value being set on them; and, in either case, we act contrary to the intention of the Creator. On one hand, we have too little regard for the brute creation, when, under pretence of being permitted the use of them by God, we assume an unlimited power over them, and think we have a right to treat them according to our caprice. But how can we prove that we have this right? and even supposing that we had, would it be just, that our power should degenerate into tyrannic cruelty? All who are not enslaved by passions, or corrupted by vicious habits, are naturally inclined to compassion towards every being that has life and feeling. This disposition, undoubtedly, does honour to man, and is so deeply engraven on our minds, that any one who eradicated it, would prove to what a degree he was degraded and fallen from the dignity of his nature. He would have but one step more to make—to deny to man the compassion he refuses to beasts, and he would then be a monster. Experience but too well justifies this remark, and many examples of such ferocity may be easily recollected. History furnishes us with them in abundance. We there find, that in countries where the people took pleasure in the

combats of animals, they also distinguished themselves in cruelty towards their fellow-creatures. So true it is, that our treatment of beasts has an influence on our moral characters, and on the gentleness of our manners.

It may be said that we have a right to destroy hurtful animals. I confess it: but does it follow that we are authorized to tear from them, without pity or regret, a life which is so dear to every creature; and that, when necessity forces us to it, we shall find a barbarous pleasure in it, or think we have a right, in thus depriving them of life, to make them suffer torments more cruel than death itself? I grant that the Creator has given us the animals for our use and pleasure, and that their labours are designed to lighten ours; but it does not follow that we may unnecessarily fatigue them, exhaust them with labour beyond their strength, refuse them sustenance merited by their services, or aggravate their sufferings by severe treatment. But no more need be said in regard to this first kind of abuse.

People sometimes fall into the other extreme. Those animals of a social character, which are most connected with us, which live in our houses, and which peculiarly contribute to our amusement or utility, sometimes inspire us with an extravagant and ridiculous affection. I am almost ashamed to say, there are men and women extravagant enough to love those creatures to such a degree as to sacrifice to them, without scruple, the essential duties they owe to their fellow-creatures. Let war be kindled between nations; let armies destroy one another; the news will not make the least impression on a lady, who some days before was inconsolable for the loss of her lap-dog! Much might be said upon this subject: but I shall wave it, and conclude these reflections by a remark of much greater importance. Parents, guardians, and teachers, cannot abstain too scrupulously from every abuse of animals in the presence of children. It is the more necessary to insist on this, as the practice of it is so much neglected, and the rising generation are frequently influenced by such pernicious examples as are productive of the most baleful consequences. No animal should be put to death in their presence; much less should they be employed to perform so cruel a task. Let them be taught to treat ani-

mals as beings which have life and feeling, and towards which we have certain duties to fulfil. But, on the other hand, let due care be taken that they do not attach themselves too much to animals, or grow passionately fond of them, as they are sometimes apt to do. In guarding carefully against children's making a bad use of animals, either way, they should also be taught to make a good use of them, that they may, from their earliest age, be accustomed to acknowledge, even in those creatures, an impression of the perfections of the Creator.

APRIL II.

The Motion of the Earth.

When the delightful prospect of the rising sun renews, each morning, in our souls the gratitude and admiration due to the sublime Author of the universe, we may, at the same time, observe that the place in which this magnificent sight is beheld, changes with the seasons. To be convinced of this, we need only examine the place where the sun rises in spring and autumn; and we shall perceive it afterwards, in summer more to the north, and in winter more to the south. We may thence reasonably conclude that some motion must be the cause of these changes; for we cannot see a body of any sort change its place, without a motion taking place, either in itself, or in us who observe it. Many people suppose that it is the *sun* which moves, as it is seen sometimes on one side and sometimes on another. But as the same phenomenon must take place, supposing the sun to remain immovable, and that we with the earth were turning round it, we ought to depend less on our conjectures, than on the repeated observations made by astronomers upon this subject, which sufficiently prove the motion of the earth.

Let us, in the first place, represent to ourselves the immense space in which the celestial bodies are placed: it is either empty, or filled with a substance, infinitely subtle, called *ether*. It is in this space that our globe floats, as well as all the other planets which compose the solar system. The sun, the dimensions of which have been already mentioned, is placed in the centre, surrounded by its worlds, which it surpasses greatly in

size. The principle of gravity which our globe has, in common with all other bodies, draws it towards the centre; or the sun attracts the earth, by the superior power which greater bodies have over the lesser: so that as the earth tends to fly off from the sun, it is counteracted by the superior power of that luminary. Thus the earth is made to describe a circle round the sun, somewhat analogous to the curve described by a cannon-ball, which, though it soon falls on the ground, would probably continue the same line for the space of some miles, if it were sent off from the top of a high mountain. Suppose a greater height, it would go farther in proportion. Add still to that height, and it would go as far as our antipodes, to return at last to the point whence it set out.

All these effects take place from the laws of gravitation, or the attractive power of our globe; and it is in this manner that the earth describes its orbit round the sun. This orbit is not a perfect circle, but an ellipsis; which occasions our being farther from the sun at one time than another. This orbit is forty-four thousand semidiameters of our globe; and in making its revolution round the sun, the earth takes 365 days, 5 hours, 48 minutes, and 45 seconds, the space of time which is the measure of one year: after which revolution we find the sun again in the same place; for, in each point of the orbit of the earth, the sun appears to us at the opposite side of the sky; so that, while the earth insensibly continues its motion, we are apt to imagine it is the sun which moves. In spring the sun is equally distant from the poles: which causes equal nights and days; in summer it is 23 degrees 30 minutes nearer the north, which occasions our longest days; in autumn it returns to an equal distance between the poles; and, in winter, it removes as far towards the south as it had approached the north, and it is then that our days are the shortest.

If such be the order and plan of the great work of the creation, how much reason have we to admire and adore the supreme wisdom and goodness of the Creator! How precious to us ought every new-acquired knowledge to be, that discovers to us the Father of nature by his marvellous works. We find him every where; and are every where obliged to cry out,—Lord, thou hast formed all things with admirable wisdom!

Let us then in the fullest assurance, and with the most unbounded confidence, commit the care of our lives to Him who governs the world with so much wisdom. The sun and planets invariably obey his laws, and shall we presume to oppose his will, or to violate his commands? When we undertake a voyage, we have need to take refuge from surrounding perils in his paternal care: and how much more need have we of his protection, in the course of so many thousand leagues which the annual rotation of our globe causes us to pass through! Is it not an important blessing, though too little thought of, that we have been hitherto preserved in so formidable a voyage? Shall less striking phenomena, and dangers of smaller magnitude, appal our minds after such demonstrations of the protection of the Almighty in the most important revolutions of nature? Let us henceforth banish all distrust, and surmount every fear, by faith in the Creator of the heavens and the earth; and may we be enabled to call him *our* Father through the reconciliation of his Son, Jesus Christ.

APRIL III.

The immense Riches of Nature.

To be convinced of the extreme liberality of Nature in the dispensation of her gifts, it would be sufficient to reflect on the prodigious number of human creatures who receive their food, raiment, and all the pleasures they enjoy, from that beneficent mother. But as this is, perhaps, one of those things which, because they happen every day, no longer make a suitable impression upon our hearts, we will turn our reflections on creatures which are partly made for our use, and some of which are the objects of our contempt. This meditation will teach us that all the beings diffused over our globe proclaim the goodness of their Author, and may incite us to glorify his divine name, if our hearts be susceptible of feeling.

An innumerable quantity of living creatures, inhabitants of the earth, the air, and the waters, are daily indebted to Nature for their subsistence. Even the animals which we take care to feed, properly speaking owe their food to her; as the forests produce acorns,

the mountains grass, and the fields a variety of herbage, without any culture. All the genera of fish subsist without the aid of man, unless he choose to feed a few particular sorts for his own amusement. Amongst birds, the most numerous, and, perhaps, the most despicable tribe is that of sparrows: their number is so prodigious, that the produce of all the fields in the empire of France would not suffice for their support during the space of one year. It is Nature who takes from her immense magazine what is necessary for their support; and they are but the smallest part of her dependants. The number of *insects* is so immense, that many centuries may elapse before their several species and classes can be perfectly known. How numerous are the flies! and how many species of insects float in the air, which occasionally annoy us by their stings! The blood which they extract from us is a very accidental food to them; and it may be supposed, that, for one that lives on it, there are millions which never tasted human blood, nor that of any other animal. On what do all those creatures subsist? Every handful of earth contains living insects; and in every drop of water creatures may be discovered whose means of propagation and support appear altogether incomprehensible!

Immensely rich as Nature is in living animals, she is equally fruitful in means for their subsistence; or rather, it is the Creator who has poured into her bosom this inexhaustible source of riches. He provides food and shelter for all his creatures; clothing the fields with herbage, and directing the animal tribes to select their proper elements: for none of them are so insignificant in his sight, as to induce him to neglect their wants, or to withhold from them his tender regards. Herein is manifested the greatness of the Creator, which so easily performs what all the monarchs and people of the earth, combined together, could not accomplish. He satisfies every living creature:—he feeds the ravens that call upon him, and every insect that exists in the air, in the earth, or in the water!—And will he not do for us what he does for them? If ever doubts or fears possess our souls, let us reflect upon the multitudes which he daily supports. Let the birds of the air, the wild beasts of the desert, and those millions of creatures which man takes no care of, teach us the art

of living contentedly. He who adorns the flowers of the field, and provides suitable nourishment for all animals—this great Author of nature assuredly knows our wants. Let us, therefore, apply to him in all our afflictions, and let our prayers be uttered in the language of humble faith and holy sincerity.

APRIL IV.

Sun-rise.

HAVE you ever witnessed the superb spectacle which the rising sun every day affords? or has indolence, indifference, or the love of sleep, prevented you from contemplating this wonder of nature? Perhaps you may be ranked amongst the number of those who never thought a sight of Aurora worthy the sacrifice of some hours' sleep; or you are like others, who, satisfied with the light of the sun, do not trouble themselves with inquiring into the cause of this great effect. Or, perhaps, you may be classed with millions of your fellow-creatures, who behold this glorious object every day without its exciting any emotion or pleasing reflections in their minds. To whatever class you belong, suffer yourself now to be roused from this state of insensibility, and learn what thoughts this interesting appearance ought to excite in your mind.

There is no phenomenon in nature more beautiful and splendid than the rising sun. The richest dress that human art can invent, the finest decorations, the most pompous equipage, the most superb ornaments of royal palaces, vanish and sink to nothing, when compared with this beauty of nature. At first the eastern region of the sky, clothed in the purple of Aurora, announces the sun's approach. The sky gradually assumes the tint of the rose, and soon flames like burnished gold; while the solar rays dispel the mist, and diffuse light and heat over the whole horizon. At length, the sun himself appears in all the splendor of majesty, and rises visibly higher and higher in the heavens; while the birds express their joy by sweet and melodious warblings, the flocks and herds bound playfully over the smiling meads, and all the animated tribes seem influenced by a renovation of strength and spirits.

Let *our* songs of praise also ascend to heaven, and

celebrate the praises of that Adorable Being, by whose command the sun rises, and whose hand so guides its diurnal and its annual course, that we draw from it the happy revolution of night and day, and the regular succession of the seasons. Let us raise ourselves towards the Father of lights, set forth his majesty, and celebrate him by a pious confession of our dependance on him, and by actions which are pleasing in his sight. Behold! all nature proclaims order and harmony: the sun and all the planets run their appointed course; each season produces its respective fruits, and every day renews the splendor of the sun. Shall *we*, then, in the midst of the active creation, distinguish ourselves by silent ingratitude and supine indifference? Rather let our virtue, faith, and pious zeal, convince the infidel how worthy of adoration that Being is, whom he despises: and let the tranquillity of our souls demonstrate the mild and merciful nature of that God, before whom the libertine justly trembles. Let us act, towards our fellow-creatures, as God does to us, and be to them what the sun is to the whole universe. As he daily sheds his benign influence on the earth; as he rises for the ungrateful as well as the righteous; as he shines on the humble valley, as on the highest mountain; so let our lives be useful, beneficent, and consolatory to others. Let us each day increase the charitable disposition of our hearts; let us do good to all, according to our abilities; and let us endeavour so to live and act that our lives may be a blessing to mankind.

APRIL V.

Wonderful Construction of the Ear.

Although the ear, it is true, with respect to beauty, must give place to the eye, it is perfectly formed, and is no less a master-piece of creative wisdom. This will appear from its position; for it is placed in the most convenient part of the body, near to the brain, the common seat of all the senses. The external form of the ear merits our attention and admiration; its substance is between the flexible softness of flesh, and the hardness of bone. Were it flesh only, its upper part would fall down over the orifice, and prevent the communication of sounds; if, on the contrary, it were com-

posed of solid bones, it would be very painful and inconvenient to lie on either side. For this reason the Creator has formed the outward part of the ear of a cartilaginous substance; which has the consistence, the polish, and the folds, most proper to reflect sounds; for the chief use of the external part is to collect the vibrations of the air, and convey them to the orifice of the ear.—The interior construction of this organ is still more surprising. Within the cavity of the ear is an opening, called the *auditory canal*, the entrance to which is defended by small hairs, to prevent insects from penetrating into it; and for the same purpose it is moistened with a bitter glutinous matter, called ear-wax, which separates itself from the glands. The *drum* of the ear is placed obliquely in the auditory pipe, and really resembles the instrument from which it derived its appellation: for, in the first place, there is, in the cavity of the auditory canal, a bony ring, on which is stretched a round membrane, dry and thin: in the second place, there is, under that skin, a string stretched tight, which does here the same service as that of the drum, for it increases, by its vibrations, the vibration of the drum of the ear, and serves sometimes to extend, and sometimes to relax, the membrane. In the cavity under the skin of the drum, there are some very small but remarkable bones, called *auditory bones*, and distinguished by the following names—the *hammer*, the *anvil*, the *orbicular bone*, and the *stirrup*. Their use is, to contribute to the vibration and the extension of the skin of the drum, or tympanum. Behind the cavity of the drum, there is another opening called the *Eustachian tube*, which communicates with a pipe which leads to the palate, and is equally necessary to produce the sensation of exterior sounds. Next comes the *snail*, which rises in a spiral line; and behind is the auditory pipe, which terminates in the brain.

Hearing is, in itself, a thing worthy of admiration. By a portion of air, extremely small, which we put in motion, without knowing how, we can, in an instant, make our thoughts, desires, and conceptions known to another; and this in as perfect a manner as if his soul could see into ours. But, to comprehend the action of the air, in the propagation of sounds, more clearly, we must remember, that the air is not a solid but a fluid body.

Throw a stone into calm water, and it will cause undulations, which will extend, more or less, according to the degree of force with which the stone was thrown in. Let us now suppose that a word spoken produces a similar effect in the air to that of a stone in the water. While the speaker is uttering the word, he expels, with more or less force, a quantity of air out of his mouth. This communicates an undulatory motion to the external air in which it meets, and the air thus put in motion, shakes the stretched membrane of the drum in the ear: this membrane, thus shaken, communicates vibrations to the air which resides in the cavity of the drum, and that strikes the hammer; the hammer, in its turn, strikes the other little bones; the stirrup transmits to the nerves, through the oval orifice, the motion it has received; and they then vibrate like the strings of a violin: this motion gains strength in the labyrinth, and reaches to what is properly called the auditory nerve. The soul then experiences a sensation proportionable to the force or weakness of the impression received; and, by virtue of a mysterious law of the Creator, it forms to itself representations of objects and of truths.

How deplorable would our case have been, had the Creator denied us the faculty of hearing!—a faculty, in certain respects, more important than that of sight. Through the eye we receive only sensible and corporeal ideas; but by the ear we form conceptions of spiritual and invisible objects. If, therefore, we had been born deaf, it would have been extremely difficult for us to have received any instructions relative to the being of a God, the nature of the soul, or the way of salvation. In order to make his goodness more apparent to mankind, the Supreme Being now and then permits a person to be born deaf. Let serious reflection on the lot of such people lead us to appreciate the sense, of which they are deprived; and let us evince our gratitude for so great a blessing, by making a proper use of it.

APRIL VI.

The Milky Way.

When we examine the sky in a clear night, we perceive a pale irregular light, and a certain number of

stars, whose mingled rays compose this luminous tract, which is commonly called the milky way. The stars themselves are too remote to be perceived separately by the naked eye; and between those which are visible through a glass, there are spaces apparently filled by an immense number of other stars, which even a good telescope cannot render distinctly perceptible. It is true, that the number already discovered is prodigious; but if we could make our observations on another side of the globe, nearer to the antarctic pole, we should discover a great number of stars which have never appeared on our hemisphere: and even then we should not know half, perhaps not a thousandth part of the radiant bodies which shine in the immense expanse of heaven. All the stars which we perceive in the milky way appear no more than luminous points, and even instruments of the greatest power afford no augmentation of this apparent magnitude; yet each of these, in all probability, is considerably larger than the whole terraqueous globe. If an inhabitant of our globe could travel in the air, and could attain the height of 160 millions of miles, the fixed stars would still appear only like shining specks. However incredible this may seem, it is not a chimerical idea, but a fact, which has actually been proved; for, about the tenth of December, we were more than 160 millions of miles nearer the northern part of the sky than we shall be the tenth of June, and, notwithstanding that difference, we did not perceive any difference of size in those stars.

This milky way, so inconsiderable in comparison of the whole space of the heavens, is sufficient to prove the greatness of the Supreme Being; and every star discoverable in it teaches us the wisdom and goodness of God. Yet what are these in comparison of the immense quantity of globes and worlds which roll in the firmament? Here reason stops, and is confounded. To admire and adore is all that is left to mortals.

Whenever I behold the starry sky, may I raise my thoughts to thee, my adorable Creator! With shame and regret, I confess that I have hitherto too seldom contemplated thy greatness, or admired thy power in the beauteous scene of the firmament. Pardon this insensibility—this ingratitude. Loose a soul confined by earthly ties, and raise it to thyself, O Creator of heaven

and earth! Humble me by a due sense of my own unworthiness, and afterwards elevate me by the blessed assurance that my ransomed soul shall, one day, soar beyond the highest region of the stars!

APRIL VII.

Reflections on the Seeds of Plants.

The vegetable kingdom, to an attentive observer of the works of God, is a school where he learns the profound wisdom and unlimited power of that supreme Being. Though we were to live a hundred years upon earth, and it were possible to devote every day to the study of one particular plant, there would still remain, at the end of that time, many things we either had not observed, or had not been capable of perceiving. Let us reflect on the production of plants; let us examine their interior construction, and the formation of their several parts; let us consider the simplicity and variety discernible in them, from the blade of grass to the lofty and umbrageous oak; let us try to learn the manner in which they grow, and are preserved, and the different uses they are of to men and animals. Each of these articles will sufficiently employ our faculties, and make us sensible of the infinite power, wisdom, and goodness of the Creator. We shall every where discover, with admiration, the most incomprehensible order, and the most excellent designs.

Though we were to know no more of plants than those phenomena visible to every eye: though we were only to know that a grain of corn, sown in the ground, shoots first a root into the earth, and then a stem upwards, which bears branches, leaves, and fruit, wherein are contained the seeds of new plants; this alone might suffice to evince the wisdom of the Creator. Let us attentively consider all the changes which a grain of wheat undergoes in the earth. We sow it in the ground at a certain time; and this is all we can do. But what are the operations of nature, after we have thus left it to itself? As soon as the earth supplies it with sufficient moisture, it swells, and bursts open the outer coat, which concealed the root, the stalk, and the leaves. The root penetrates into the earth, and prepares nutriment for the stem, which now makes an effort to rise a-

bove the surface of the ground. When it has sprung up, it gradually increases till it attains its proper height, and begins to unfold its leaves, which at first are white, then yellow, and at last tinged with green. If we confine our observations to this single grain of wheat, so necessary to our subsistence, what admirable wisdom we shall discover in it! As soon as the outer skin is rent, and the root has penetrated the earth, the stem ventures to spring up, in the form of a very slender stalk: yet, weak as it appears, it is already strong enough to bear the intemperance of the seasons. By degrees it grows up, and becomes an ear of corn, the sight of which is so pleasing to mankind. The grain is enclosed with leaves, which serve as a shell till it is strong enough to break through them; and it is armed with points, to defend it from the birds.

The fields where corn is sown should remind us of those grounds where our Creator sows another kind of seed. Human bodies, when deposited in the grave, may be considered as seeds which are to spring up and be matured in eternity. We have as little reason, on looking at a grain of wheat, to expect it to produce an ear of corn (though the essential parts of it are in the grain), as we have to believe that our bodies, reduced to dust, will one day become glorified bodies. The time, however, will come, when the seed will unfold itself. Our dust will be raised again, and we shall live, through Jesus Christ. Our bodies must decay, and turn to dust; but we shall not lie eternally in the grave: our souls shall repose, after the labours of this life, on the bosom of our God. Eye hath not seen, nor ear heard, neither hath it entered into the heart of man to conceive any thing equal to such a salvation.

APRIL VIII.

The blue Colour of the Sky.

Were we to judge from the first impression of our senses, we might consider the sky as an immense vault, painted blue, and studded with brilliants. It is true, such an idea could hardly be formed but by the common people and children: yet there are many who think themselves superior to those, who, notwithstanding, form very absurd notions of the sky. The reason why

it appears of an azure colour is, because our atmosphere is not perfectly transparent. Were it possible for us to elevate ourselves very high above the surface of the earth, the air would be found more rare in proportion to our ascent, till it would become incapable of assisting in respiration, and would at length terminate in pure ether. The higher we climb on mountains, the lighter the atmosphere grows, and the paler the bright azure of the sky appears. And if we could rise to the region of pure ether, this colour would be entirely lost: the sky would seem to us as black as night; for so do all objects appear that do not reflect any rays of light.—Consequently, if the air that surrounds us were as transparent as ether, the sky would not appear blue. Our air is filled with innumerable minute particles, which, when illumined by the sun, receive a motion, which produces new rays; and these particles, though dark in themselves, become visible to us when thus lighted up. Their colour is blue; which is the reason that a forest, when we are near to it, appears green; but as we retire it appears of a bluish colour. However pale and subtle the blue rays of air may be, so great a quantity of them strike on our eyes, when we are in the open air, that the effect resulting from them is a dark blue.

These reflections may lead some to consider the sky differently from what they have hitherto done. It may hence be concluded, that there is no phenomenon in nature, not even the colour of the sky, in which we may not discover order, utility, and some wise purpose. As *green* is the best colour that could have been chosen for beautifying the earth, so the fine *azure* of the heavens is best calculated to charm the eye. How dreadful is the appearance of the sky when covered with stormy clouds! but what beauty, majesty, and simplicity, in the colour of it, when the weather is calm and serene! The apartments of kings, decorated by the most skilful painters, are nothing, when compared to the majestic simplicity of the celestial vault. When the eye has for a long time contemplated the beauties of the earth, it satiates, and becomes tired; but the more we contemplate the heavens, the more charms we discover in them. O thou almighty Creator! who hast so richly adorned the sky, may I meditate on thy per-

fections, and adore thy holy name whenever I contemplate this display of celestial beauty!

APRIL IX.

The Utility and Necessity of Air.

Air is the element to which this lower world owes its life, beauty, and preservation. All the changes we observe in the different beings upon our globe, depend on air. It is indispensably necessary to the existence of animals; for the greater part of them would expire in half a minute, if they were deprived of it, and the others would not support its loss above two days at the most. Not only terrestrial creatures, and those which inhabit the air, require this element, but it is absolutely necessary to the inhabitants of the water, which require a change of fresh air as much as other animals. Birds cannot fly but as they are supported by the air: hence their lungs have openings, through which the air they respire passes into the whole cavity of the body, which being thus inflated, becomes lighter, and better adapted for flying. Even plants, in order to vegetate, require a supply of air, and are therefore furnished with a number of little vessels which serve to imbibe it, and by means of which their smallest particles are saturated with the necessary juices. Nothing is easier than to enumerate proofs of the necessity of air. A single circumstance, however, will render it sufficiently obvious:—If air did not exist, there would be no twilight before the rising of the sun. That luminary would flame suddenly above the horizon, and would appear as bright as at noon-day; nor would its aspect be changed till the instant in which it left us in total darkness. The sun, indeed, would strike our eyes with a vivid light, if there were no air; but it would resemble a great fire blazing during the night in an open country. It would in some sort be day, whilst the sun, and the objects immediately surrounding us, would be visible; but all the rays which fell on bodies, at a certain distance, would be reflected in a direct line, and be lost in the extent of the heavens: Thus while the sun would be placed directly over our heads, we might still experience a sort of night, if the atmosphere were not placed between us and that luminary.

Let us now recapitulate the advantages which air produces to our globe. It is essentially necessary to the respiration of living beings; to the motion of winged animals, and those which swim in water; to the propagation of sounds; to hold the earth in equilibrium with other globes; and to the formation of vapours, rains, and winds. How necessary is it also to fertilize the earth, and to promote the vegetation of plants, and to disperse the noxious vapours which exhale from different bodies! The sun could not furnish us with either heat or light enough, if our globe were not surrounded with air. No person could be heard, if this element did not set the organs of speech in play, transmit sounds, and act on the organs of hearing. How innumerable, then, in all respects, are the advantages which air produces to the human race! If we accustomed ourselves to contemplate this great agent of nature with an attentive mind, we should be naturally led to extol the works and benefits of our God. Hitherto we have, perhaps, neglected this duty by taking a superficial view of the creation, and by forgetting our unworthiness in the midst of received blessings. Let us, then, for our peace and happiness, endeavour to become, by the assistance of divine grace, attentive and sensible spectators of the works of God: for to those who consider them thus, they become sources of pure and permanent joy.

APRIL X.

Different Soils of the Earth.

The soil of the earth is not the same in all situations. The upper stratum is generally formed of a black, friable, and rich earth, which, being mixed with the remains of plants and animal substances, becomes the nutritive parent of thousands of vegetables which enrich our globe. Even this stratum, however, varies in quality: being light and sandy in some places, heavy and clayey in others: sometimes it is moist, sometimes dry; here warm, and there cold. Hence many herbs and plants grow spontaneously in some countries, which will not succeed without art and cultivation in others. This diversity of soils is also the cause why vegetables of the

same species differ among themselves, according to the nature of the ground where they are planted.

In this instance we again discover the wisdom of our Creator. If all soils were alike, and possessed the same qualities, and constituent parts, we should be deprived of many vegetables; because each species requires a soil analogous to its nature: some require a dry soil, some a moist one; some require heat, others delight in cold: some grow best in the shade, others in the sun; several thrive on mountains, and many more in valleys. Hence it is that each country has a certain number of plants peculiar to itself, and which do not arrive to equal perfection in others. Let the alder be transplanted into a sandy soil, and the willow into a rich and dry one, and it will be found, that those soils are not adapted to the nature of the trees, and that it will be better to plant the former near marshes, and the latter on the borders of rivers. Our Creator, therefore, has provided for each species, by allotting to them the soil analogous to their internal constitution. It is true, that art can sometimes force nature to produce according to pleasure; but it is seldom worth the trouble; and, in the end, nature is found superior to all the researches of skill and the labours of art.

The same variety which is found in the soil of our globe, is also observable in the characters of mankind. There are some whose hearts are so hardened, that they cannot profit by instruction: no motive can influence, no truth, however evident, can rouse them from their stupidity. This character may be compared to a stony ground, which no temperature of climate, nor the most careful cultivation, can render fruitful. A character almost as worthless, is that where levity predominates. Persons of this class, it is true, receive the salutary impressions of religion and piety; but they are discouraged by the least obstacle that comes in their way; and their zeal vanishes, as easily as their good resolutions. Such are those frivolous, weak, and timid people, in whose minds virtue and piety cannot take root, because there is no depth; they resemble light and dry soils, where nothing comes to maturity, and where every thing dries up as soon as the heat of the sun is felt, because they do not supply the plant with the nourishing juices it requires. But how happy are those characters

with whom, as in a good soil, the seeds of piety spring up, ripen, and produce an abundant harvest of good fruit!—On this diversity of disposition among men depends, more or less, the effect which God's word produces in their hearts. In vain the sower sows the best seed: if the soil have not the suitable qualities, all his care is unavailing. The purity and goodness of the seed cannot supply the natural defects of the soil; for, when it is so hard and close that the seed cannot enter, or so sandy that it cannot take root, or so full of stones that it is choked up, it is impossible that it should produce fruit.

To which of these classes do I belong? Perhaps my heart is not so hard as to resist every impression. If I know it well, it resembles those light soils which produce here and there some ears of corn, which are seen, soon after, to wither. Good thoughts and salutary resolutions have often filled my heart: but how short have been their duration! Alas! I see plainly that this heart must be changed before the seeds of faith and virtue can produce good fruit, and before I can enjoy a well-founded hope of eternal salvation. But this change is not in my power: it is thy work, Divine Spirit! Assist me, O Lord! make me like the fruitful soil, ready to fulfil the duties of life: and, in order to bear fruit in abundance, make me fruitful in good works, preserving the gifts of thy grace in an honest and upright heart.

APRIL XI.

The Necessity of Repose at Night.

Labour is undoubtedly necessary to man; and it is certain, that great part of the convenience and comforts of life depend upon it: but it must be allowed that human strength would soon fail, and that man would, in all respects, become incapable of making use of his limbs, and the faculties of his soul, if God did not continually supply him with strength and activity necessary to fulfil the duties of his vocation. As we every day lose a portion of our nutritious juices, we should soon be exhausted, and fall into a mortal decay, by too great an exertion of our strength, if the animal spirits were not continually renewed and revived. That we may be able to labour, it is necessary that our blood should al-

ways supply us with a matter inconceivably thin and active, which is called the *nervous fluid*. This fluid keeps the springs of the brain and muscles in play, and maintains the bodily action and motion. But the continual dissipation of this matter would soon exhaust it, and man would fall into languor, if these losses were not repaired. If the body were continually in a state of motion, our food would not be digested, nor its nutriment regularly distributed. The labour, therefore, of the head, the arms, or the feet, must be interrupted for a time, that the heat and the spirits, which spread over the exterior parts, may be employed only in assisting the functions of the stomach, during the repose of the other parts of the body. Sleep renders us this important service. At the close of the day, our strength, which has been exercised since the morning, begins to diminish: the vital spirits sink; the senses grow dull; and we are irresistibly allured to sleep. As soon as we give way to it, we are restored and refreshed: the operations of the brain, and the labours of the body, cease at once, and the fatigued limbs acquire new strength. This renovation is as necessary to the body as to the mind: it makes our limbs more active and flexible, and preserves in a proper state all the parts of the body; it re-animates our intellectual faculties, and spreads a serenity over our souls.

How inexcusable are those, who, for trifling reasons, a vile interest, or the gratification of their passions, deprive themselves of proper time for sleep! They not only disturb the order of nature—an order established only for their good—but they enervate the strength of their bodies, and bring on themselves a premature death. Why should we be mad enough to deprive ourselves of a blessing which our Heavenly Father equally and impartially grants to the rich and the poor, the ignorant and the learned, the high and the low? Why should we shorten our days, when a wise and good Providence has ordained sleep as a mean of preserving our life? Why voluntarily deprive ourselves of the refreshing repose which sleep procures us? Alas! nights may come in which, far from tasting its sweets, we may pass restless hours on a bed of anguish, counting the tedious and painful moments; and, perhaps, we shall never know the value of sleep till we wish for it in vain.

APRIL XII.

The Magnitude of our Globe.

It is not so easy as we imagine to determine the exact size of our earth. There is, indeed, but one longitude; yet there are two latitudes, north and south, both beginning at the equator. The one extends towards the north, and the other towards the south, as far as the poles, either arctic or antarctic. No one has yet been able to penetrate as far as either pole; because the mountains of ice in Greenland, and in the northern seas, have always obstructed the passage. The labours of geometricians, however, have enabled us pretty nearly to ascertain the dimensions of our globe, and, according to the most exact calculations, its surface contains a hundred and ninety-nine millions, five hundred and twelve thousand, five hundred and ninety-five square miles. The seas and unknown parts, by a measurement of the best maps, occupy a hundred and sixty millions, five hundred and twenty-two thousand, and twenty-six square miles; and the inhabited parts thirty-eight millions, nine hundred and ninety thousand, five hundred and sixty-nine square miles, in the following proportion:

Europe	4,456,065
Asia, ...	10,768,823
Africa, ...	9,654,807
America, ...	14,110,874

Hence it appears that scarcely one third of the globe is inhabited.

It has been calculated, that there might be at least three thousand millions of men upon the earth at once; but, in reality, there are not more than one thousand and eighty millions; of which there are,

In Asia	650 millions
In Africa	150 do.
In America	150 do.
In Europe	130 do.

If, then, we suppose the earth to be inhabited by about one thousand millions of men, and that thirty-three years make a generation, it follows, that in that space

of time there die one thousand millions. The number who die on earth, therefore, amounts to,

Each year	30,000,000
Each day	86,400
Each hour	3,600
Each minute	60
Each second	1

This calculation is very striking. If the mortality be so great every year, and even every hour, is it not probable that he who reflects on it, may himself be one of those who shall next swell the list of the dead? It is at least certain, that it ought to lead us often to serious reflections. At this very moment, one of our fellow-creatures is going out of the world! and before an hour has elapsed, more than three thousand souls will have entered into eternity! What a motive for thinking frequently and seriously upon death!

Prodigiously great as the earth appears, its magnitude vanishes at once, when we compare it with the other worlds which roll over our heads. The earth is then, in comparison of the whole universe, what a grain of sand is to the highest mountain.

How does this thought exalt thee in our eyes; how inexpressible and infinite does thy greatness appear, O thou Creator of heaven and earth! The world and all its inhabitants are before thee as a drop in the ocean, or as the light atoms which sport in the sun-beams. And what am *I* among these thousand millions of inhabitants of the earth! What then am *I* before thee, thou immense, infinite, and eternal Being!

APRIL XIII.

Generation of Birds.

At this season of the year a revolution occurs in nature, which certainly merits our attention. This is the time when the birds begin to lay their eggs and hatch their tender progeny;—an operation which, however little regarded, from its annual recurrence, cannot be too much admired, as the following reflections will demonstrate:—In each impregnated egg, which has not yet been sat on, there is a spot (about the size of a freckle) visible in the yolk. In the centre of this spot,

there is a white circle, extending upwards, and appearing to join certain small bladders. In the middle of this circle is a kind of fluid matter, in which the embryo of the chick is seen to float. It is composed of two lines, or white threads, which sometimes appear to be separated from one another at their extremities, and between which a lead-coloured fluid is perceptible. The extremity of the embryo is contained in a small bag, surrounded by a pretty large ligament: and in this the navel afterwards appears. This ligament is composed partly of a solid yellowish substance, and partly of a brown fluid, which is also surrounded by a white circle. This is all that can be observed in an egg before incubation. After it has been about twelve hours under the hen, there appears in the lineaments of the embryo, a humid matter, that has the form of a little head, on which are seen small vesicles that afterwards form the vertebræ of the back. In thirty hours the place of the navel appears covered with a multitude of little vessels; and the eyes begin to be distinguishable. The two white threads, which, in uniting, have still left some space between them, enclose five vesicles, which are the substance of the brain and spinal marrow. The heart may then be seen, though it has not yet been ascertained whether the heart or the blood be first formed. It is certain, however, that the embryo of the chick existed in the impregnated egg before incubation; and that, after it has been some time sat upon, the back bones, the brain, the spinal marrow, the wings, and part of the flesh, may be seen, before the heart, the blood, and the vessels be perceptible. At the end of thirty-six hours the navel is covered with a number of vessels, separated from each other by unequal spaces. According to all appearance, they existed before, in the little spot, and are only made visible by the fluid matter which swells them. When the essential parts of the chick are thus formed, it continues to take new growth till the twentieth or twenty-first day, when it is able to break the shell in which it was enclosed.

We owe these discoveries to some great naturalists, who, by the assistance of microscopes, have observed, almost from hour to hour, the progress of the formation and the hatching of the chick. However, notwithstanding all that we have drawn from their observations, there

are many mysteries which may probably never be discovered. How does the embryo come into the egg? and who gave it the faculty of receiving, by means of warmth (for that is all the hen communicates), a new life and being? What is it that puts the essential parts of the chick in motion? and what is that vivifying spirit, which, through the shell, penetrates even to the heart, and occasions its pulsation? What inspires the birds with instinct to multiply by a way common to them all? How do they know that their young are contained in the egg? What engages them to sit on the egg all the time necessary to hatch them?

These questions cannot be answered in a satisfactory manner: but the little we do know of the generation of birds is sufficient to prove the wisdom of the Creator; as it can neither be attributed to a blind chance, nor to art assisting nature. God had the wisest reasons for ordaining that certain animals should not arrive at perfection till after they come from their mother's womb, while others remain in it till all their parts are completely formed. And he who does not discover the hand of Omnipotence in the production of birds, will not see it any where; for, if the most profound wisdom be not visible in this, it will appear in nothing.

O man! spectator of the wondrous works of God, adore with me the all-wise Being! Do not disdain to seek, in apparently small objects, the impression of his goodness, his power, and his ineffable wisdom.

APRIL XIV.

Prognostics of the Weather.

Winds, heat, cold, rain, snow, fogs, drought, and other alterations in the temperature of the air, do not always depend on fixed and regular causes. There are, however, some signs in nature which indicate the kind of weather about to take place. The position of our globe, in respect to the sun, which is known to us by the four seasons of the year; the changes of the moon, which can be peculiarly determined; the influence which these celestial bodies, and all the planets of our system, have upon the heat, the cold, the motion, and the stillness of the air; are so many immutable laws, upon which several prognostics respecting the weather may be founded.

The consequences drawn from them are so much the less to be contemned, as they are founded on experience, and by the rules of analogy, we judge of the future by the past. It is true, a thousand accidental circumstances may occasion alterations which we had no reason to expect. But it must be considered, that these contingencies are of short duration; and, if they occasion any change in the ordinary course of the temperature of the air, it is only for a little time, and in some particular places.

Annual observations demonstrate, that the changes of weather, in general, are so regular that they may be foreseen. We are seldom mistaken in supposing that the north and east winds will bring cold; the south, heat; and the west, rain: that, during a north-east wind, it will rain in summer, and snow in winter. With equal probability, we conjecture, that, when the morning sky is red, there will be wind or rain in the afternoon; and that a sky tinged with strokes of red in the evening, promises fair weather the following day. The weather of spring enables us to anticipate that of summer: if in the former there are many fogs, it is highly probable the latter will be rainy; if the spring be marked by great floods, the summer will bring extraordinary heat, and multitudes of insects; and when storms have been frequent in the vernal quarter, we have no reason to dread the return of either hoar or night frosts.

But supposing it utterly impossible to foretel the weather, we may be perfectly easy in that respect. The variations in the weather, considered in the whole, depend upon fixed rules, established by the God of wisdom; and we may rest assured that, even when they appear most unfavourable, they are, nevertheless, advantageous to the earth, and conducive to its fertilization. In every alteration of the climate, therefore, let us trust to that God whose purposes are always wise and beneficent; without whose will there could be neither heat nor cold, rain nor drought, tempests nor calms; and who turns to the good of the earth, and of its inhabitants, even those phenomena which seem to be injurious. All the ways of Jehovah declare his goodness, and all his paths are marked with glory. Wisdom and beneficence are manifest in his dispensations, and all his actions evince his heavenly care and paternal affection. Let us

for ever bless his holy name; let all creation exalt him; and let all that breathe celebrate his praises from generation to generation.

APRIL XV.

The Position of the Sun.

God has assigned a situation to the sun which perfectly suits the nature of that luminary and the uses for which it is designed. He has given it a certain size, and placed it in a space proportioned to the motions it is appointed to perform. He has put it at a proper distance from the planets, upon which it is to act; and this position, arranged so many thousands of years ago, it still preserves, without ever deviating from it: because, in reality, the least deviation would occasion the greatest disorders in nature. Certainly, nothing but unlimited power could perform such a miracle. None but God could produce this immense globe, place it in its proper sphere, mark its limits, determine its motion, subject it to proper rules, and maintain it invariably in the position and order prescribed. What wisdom and goodness shine in this plan, both in respect to the planetary system in general, and to our earth in particular.

The burning rays which proceed from a globe of fire a million times larger than our earth, must have an inconceivable force, if, in falling, they remained close to each other; but, as they separate more and more in proportion as they remove to a distance from their common centre, their power diminishes in proportion as they diverge. Had our globe been placed in a spot where those rays would have been too numerous, or too near, it could not have borne the intense heat: or had it been thrown towards the extremity of the solar system, it would only have received a faint light, and too little warmth to ripen its fruit and ordinary productions. The sun is therefore fixed in the exact spot in which it ought to be. It can now communicate sufficient light and heat to penetrate into, and to vivify the earth, with its beneficent rays: to clear the atmosphere; and to produce all those effects, without which there would be neither dew, rain, snow, hail, fogs, nor serene days. Placed as it is, it causes the regular vicissitudes of day

and night, as well as the different seasons of the year, and diversifies in each of them its influence or effects.

It is not only to the sun, but also to the other planets, to the fixed stars, and all the bodies which belong to our system, that God has allotted a place conformable to their nature, and suitable to the ends he proposed in creating them. To me, who am nothing in comparison of the sun, the Lord has vouchsafed to allot the place and situation, which, in all respects, suits me best. May I fulfil the duties of my station with as much exactness and fidelity as the sun acquits himself of his important offices, according to the invariable laws which were prescribed to him at the first instant of his creation! May I, in the place I occupy, and in proportion to my powers, be as useful to the world; share with my fellow-creatures the advantages I enjoy; communicate to the ignorant what knowledge I possess; support or strengthen the weak; and distribute, with a liberal hand, among the poor, the riches I possess.

APRIL XVI.

Permanency of corporeal Beings.

NOTHING in nature perishes; and, from the beginning of the world to the present moment there has not been a grain of sand, nor a single atom, annihilated. The first forests produced by the power of God were adorned with an innumerable multitude of leaves: these fell, withered, and ceased to be leaves; but the parts which composed them still remained, and were converted into dust, clay, or earth. The matter of which the first leaves and herbs were formed, still exists, and has lost nothing of its external parts; and the component parts of the plants which now flourish will exist, as long as the world shall last. The wood we burn ceases indeed to be wood, but its parts do not cease to exist: they are dispersed into ashes, soot, and smoke, but they are not annihilated. The kingdom of nature is liable to continual changes: but every thing that is decomposed is regenerated, and nothing finally perishes. Let us not judge by appearances. When revolutions and disorders happen in nature, we are apt to believe that many things are totally destroyed: but this is an error;—they are only differently modified, and become mate-

rials for the composition of other beings. The water which exhales in vapour does not perish: it only decreases in one place to increase in another. What uninformed persons consider as total destruction, is, in reality, but a mere change of parts; and the world, considered in the whole, is just now what it was the first day of the creation, although a multiplicity of parts which compose it have gradually undergone very considerable alterations.

This leads me to reflect on my own body, and the change it will experience in the grave. It is true, it will dissolve into dust, but it will not be annihilated, and the essential parts which compose it will always subsist. The persuasion of this truth is sufficient to guard me against the fear of the grave and corruption, and, at the same time, to confirm my soul in the cheering hope of a resurrection. Why, then, should my heart be troubled? why shudder at the thought of the grave? That which will be shut up there, is merely my earthly habitation. I myself cannot be destroyed: all my members are numbered, and will be preserved. What I have been, I shall be hereafter; and I shall live for ever and ever.

The continual duration of corporeal beings may also lead me to conclude, with much probability, that my soul is immortal. Since none of the earthy parts will be annihilated, is it to be presumed that my soul should be the only created thing that is to be destroyed? No: the whole corporeal world may sooner be annihilated than one soul should perish that has been redeemed by Jesus Christ.

APRIL XVII.

The Use of Rain.

In the truest sense of the word, rain deserves to be called a present from heaven. The blessings which our Heavenly Father pours upon us by this means, are equally numerons and indispensable. Generally destructive as the effects of a continued drought would be to us, as extensively beneficial are the mild and refreshing showers which water the earth. To describe all the advantages which result from them would exceed the powers of the most eloquent tongue, or the most de-

scriptive pen. But if we cannot exactly enumerate them, we may, at least, reflect on some of the most considerable.

The heat of the sun acts without interruption on different earthly bodies, and continually exhales subtile particles from them, which fill the atmosphere in the form of vapours. We should breathe these dangerous exhalations with the air, if they were not occasionally carried off by the rain, which beats them down to the ground, and thus clears and purifies the air. Rain is no less useful in moderating the burning heat of the atmosphere; and the reason is very evident; for the nearer the air is to the earth, the more it is warmed by the refraction of the rays; and the farther it is from us, the colder it is. The rain which falls from a high region, brings to the lower atmosphere a refreshing coolness, of which we always feel the agreeable effects as soon as it has fallen. It is also to the rain that we must partly impute the origin of fountains, wells, lakes, and rivers. Every body knows with what abundance these several sources of water are supplied in wet and rainy seasons; whereas they evaporate and become dry during a long drought. But to convince ourselves of the utility and necessity of rain, we need only observe how the earth and its vegetable productions flourish after a fruitful shower, and how they sicken and languish when this is withheld. In some respects, indeed, rain may be considered as the aliment of vegetables: it moistens and softens the earth, which would otherwise be parched and dried up by the heat of the sun: it circulates in the finer veins and vessels of plants and trees, and conveys to them those beneficial juices which preserve their life and increase their size. When it washes the mountains, it sweeps from them a soft rich earth, which falls into the valleys, and thus contributes to their fertilization.

These reflections naturally induce us to acknowledge, that the Creator has planned all with infinite wisdom, and the earth is literally filled with his goodness. Let us therefore pursue a subject which leads to the adoration of our God, that it may make a deeper and more permanent impression on our minds.

What finer object can be presented to our view than a clear and serene sky? Is not that beautiful azure vault, extended over our heads, sufficient to fill every

heart with admiration and delight? But all the beauties of the sky disappear, when, by the direction of the winds, the clouds come and draw a thick curtain before us. What are the sentiments such a revolution should excite in us? These at least it ought to inspire: Whatever beauties we contemplate in this delightful scene, there are some incomparably greater, which no cloud can deprive us of, and which can amply compensate for the loss of all others; for what are all the beauties of nature, compared to the beauty of that Great Being, in whose contemplation alone an immortal spirit can find felicity?

It is not without design that God sometimes deprives us for a while of those things which give us most pleasure: he wishes to teach us to seek our happiness in him, and to consider him as our sovereign good. Besides, those very privations are often compensated by many outward advantages. Those clouds which conceal from us the beauty of the sky, are the sources of beneficent rains, which render the earth fruitful. Let us remember this; and, every time that adversity renders our days gloomy and melancholy, let us be persuaded, that even these misfortunes will become, in the hands of our Heavenly Father, instruments of future happiness. Let us also consider rain as an emblem of the gifts of fortune: for, beneficial as moderate rains may be, they are equally hurtful if they last too long, or come unseasonably. So it is in respect to earthly goods; their too great abundance might be the cause of our destruction. Let us, therefore, thank our Divine Parent for refusing us gifts which we might afterwards find to be real punishments: and let us learn to be content with all the dispensations of a wise and gracious Providence in the government of the world. God only can know the manner in which his blessings can be best bestowed. He sendeth forth his commandments to the clouds, and they fly to execute his sovereign will. Shall man presume to direct their course, though perhaps the least considerable part in the ordinance of the world? How, then, can we be rash enough to blame the ways of Providence on more important occasions?

APRIL XVIII.

On Respiration.

Of all the functions of animal life, respiration is the principal and most necessary. Without this, there would be no possibility of expelling the saliva, or getting rid of superfluous humours; nor could speech and the various modulations of voice take place. It is of use to the smell; to mix properly the chyle with the lymph and the blood; to give to the latter its red colour; and perhaps also to support and renew the animal spirits, by mixing the air with the blood. It is certain that we could not live an instant, if we were deprived of breath.

But whence proceeds this source of life? Our lungs are, properly speaking, the organs by which we draw in and exhale the air. This intestine is somewhat like a large purse, connected, at the top, with a tube, by which the air penetrates into a number of minute ramifications of vessels, which form the internal structure of the lungs. When the air is received into the lungs, the abdomen is distended, the ribs expand, and the lower part of the sternum, or breast bone, comes forward. On the contrary, when we expel the air, in the act of expiration, the abdomen is drawn in, the ribs are depressed, and the sternum retires towards the back.

That these operations may be performed in the most convenient manner, the Creator has admirably arranged the internal parts of the body. More than sixty muscles are continually in motion to procure respiration, by alternately dilating and contracting the lungs. Nothing can be more admirable than the structure of the windpipe: it is covered with a valve, which closes it exactly at the moment of deglutition, and prevents, by that means, the food from passing into it, or an interruption of breathing. There are not less wonders observable in the lower parts of this organ; in the branches of the windpipe; in the vesicles of the lungs; in the distribution of the veins and arteries which every where accompany the bronchial veins and the vesicles, in order that the blood they contain may receive, on all sides, the impression of the air.

It is our duty to bless our Creator, that, after having given us the faculty of respiration, he has, by his good-

ness, hitherto preserved our breath. What emotions of gratitude and adoration ought to arise in our souls, when we consider, that we respire twenty times in each minute, and, consequently, 300 times in a quarter of an hour! A thousand accidents might happen to interrupt, or totally stop, this faculty of breathing. How many hurtful things during our eating, drinking, or slumbers, might enter into the windpipe and occasion instant death! If thy providence, O Lord, did not design to prolong our breath, if thou didst not prevent the fatal consequences of our imprudence and neglect, we should have been long ago deprived of life. But have we felt all the gratitude due for these continual marks of thy goodness? Respiration is one of those blessings we enjoy every instant, without, perhaps, remembering, that it is to Thee we are indebted for it. It would, however, be very just and right, that we should sometimes think of this blessing which we continually receive; and, if we accustomed ourselves to be more attentive to particular and daily blessings, we should also contemplate with more delight the whole of the works and wonders of God, and be more sensibly affected by them.

APRIL XIX.

Proofs of the Goodness of God, derived from the Works of Creation.

The most common and most important phenomena which we see on the earth, or in the air, tend evidently to the service and benefit of the animal world. All that we see around us, above our heads, or beneath our feet, conduces to our support and enjoyment. What is more necessary for the preservation of life than food? With this, therefore, the earth is every where covered; and, herbs, grain, and fruit, are so abundantly diffused over its surface, that there is scarcely any place where animals may not find their proper nourishment. The Almighty has not confined his bounty to the mere supply of our wants and the relief of our necessities; but he has also designed to furnish us with whatever can contribute to our comfort and convenience. If it were only necessary that our lives should be preserved, water and common roots would suffice for this purpose; but our liberal and bounteous Creator has furnished us with

a luxuriant profusion and rich variety of aliments. He does not act towards us like a rigid economist, who only gives to those, who depend on him, what is necessary to keep them from starving: but, like a generous host, he spares no cost to treat his guests, and to provide an ample supply of whatever can give them pleasure. Such is the munificence of God, that there is scarcely upon the face of the earth, a single shrub, a plant, an herb, a piece of water, or a marsh, that does not serve for dwelling and food to some living creatures. In a tree, for example, there are (beside the fruit), leaves, bark, and wood; and each of these parts supports an innumerable multitude of creatures. Caterpillars feed on the leaves; certain worms subsist on the bark; others inhabit the woody part; and there is, in fact, nothing in nature that is not useful to some species of animal. How benevolent, then, must He be who never forgets any of the creatures which he has formed, but who constantly watches over, and kindly provides for their necessities! What is there more pleasant than light? "Truly, the light is sweet; and a pleasant thing it is for the eyes to behold the sun." Its rays illumine the immense expanse of the heavens; and cheer our sight as long as the day continues. Light discovers to us all the riches of the divine works. Without it nature would be a desert, and its innumerable beauties would for ever remain unknown.

With what goodness has God provided for the gratification of our senses! For example, he has chosen the mildest and properest colours to please and refresh the sight. Experience proves, that blue and green reflect those rays which are least injurious to the eyes, and which they can contemplate the longest without being fatigued. Hence, the Divine Goodness has clothed the heavens with blue, and the earth with green—two colours which are the most pleasing and suitable to the organs of sight. They are sufficiently vivid to make agreeable impressions on the eye, and not too bright to injure it: at the same time they have a variety of shades, sufficient to distinguish objects, and to prevent a tedious uniformity. Besides plants of different green shades, the earth produces the most beautiful flowers; which not only delight our eyes with thousands of elegant tints, but which also perfume the air, and regale our

senses with the most delicious odours. Even the ear is not unemployed: it is charmed with the songs of birds, which fill the groves and fields with their melodious warblings.

With a heart full of gratitude and joy I exalt thee, O God! and celebrate thy goodness. How great is thy mercy!—how tender and gracious thy fatherly protection! None of thy creatures are concealed from thee: none of them are despised or disregarded; but all, without exception, are the objects of thy providence, and the subjects of thy merciful love. May thy beneficence ever be the subject of my meditations: and may my soul incessantly bless thee, and rejoice in the remembrance of thy goodness!

APRIL XX.

Beneficial Influence of the Heat of the Sun.

At the approach of spring, revolutions pass before our eyes which must fill every attentive observer with astonishment. Nature gradually recovers the life she seemed to have lost in winter. The earth is clothed with verdure; and the trees are covered with blossoms. On all sides new generations of insects, and other animals, are seen bursting upon our view, rejoicing in their existence, and endowed with a thousand different instincts. Every thing is animated: every thing revives. And this new life, which appears in the noblest parts of nature, is produced by the return of warmth, which awakens animals and plants, and puts their renewed strength in motion. This admirable revolution is occasioned by the sun, which is the source of life, sensation, and joy, as its salutary and enlivening rays are spread over all nature. The seeds feel its effect, and open in the bosom of the earth. It is from thence that the plants and vegetables shoot, spring up, and grow. Its approach revives and strengthens animals. Every living creature that exists or vegetates, feels the benign influence of this powerful luminary. How melancholy would be our lot, if deprived of the genial rays of the sun! How dreary and sad would the earth appear, now become an uninhabitable desert! Into what a lifeless state would most creatures fall, and how wretched and languid would such existence be! What a source

of joy and gladness would the heart of man be deprived of, if he could not enjoy the solar rays, or the light of a serene day! Nothing would compensate for the loss of it. The mildest night, the gentlest artificial warmth, could not supply the place of that vivifying virtue which the light of the sun communicates to every being, and which has a salutary effect, very different from that of terrestrial fire. Men and animals know and feel it. A valetudinarian, shut up warm in his room, with every possible assistance, will not gain as much strength in many weeks, as he would in a very short time from the warmth of the sun in the fine weather of spring. Plants forced in hot-beds never gain such a degree of strength and consistence as those which grow in the sun: in the latter, every thing combines for the perfection of plants and animals; whereas, in artificial heat, we see nothing but the weak and languishing efforts of an ineffectual substitute. But would the sun exist, and could it communicate light and heat to us, if God, the Creator of all things, had not formed it, and given it the power of diffusing over the whole earth its quickening virtue? It is from the Lord we receive all the blessings which are derived from the sun: it is he who created it, who rules its course, and who preserves its light and splendor. Each morn he causes it to appear again, and in each season makes us feel its happy effects. Without the Supreme Being there would be neither sun nor light, heat nor spring. The sun's beneficent warmth, its beautiful and clear light, should lead to the Being of beings, the Source of every blessing, and the Father of light. The Pagans were too blind to acknowledge God as author of the sun: they stopped at the effect without acknowledging the cause. But we know there would be no sun if he did not exist; that it would neither give light nor heat, if not ordained by God. We know that vegetation, increase, growth, all the blessings which surround us, all our agreeable sensations, all that charms or delights us, proceed from him. The sun is but the instrument of his goodness, the minister of his will, and the herald of his glory.

The world would, undoubtedly, be a cheerless desert, if deprived of the light and heat of the sun; and the heart of man would be a barren and joyless waste, were it not for the quickening grace and salutary influences

of the Sun of Righteousness. Let us therefore recollect, if we possess any life, virtue, or happiness, it is alone from *Him* we have received them. All other means which we can employ to obtain wisdom, happiness, or piety, will be found altogether unavailing. We shall resemble dead trees, without fruit or foliage, if we be not quickened by his mighty power. Lord Jesus! lift upon me the light of thy countenance; and mercifully grant, that, as all nature languishes for the presence of the sun, and longs for his appearance, my soul may long to experience thy benign and refreshing influence, which alone can comfort my feeble spirit, purify and strengthen my wavering heart, and make me fruitful in every good word and work.

APRIL XXI.

Relations that all Creatures have to each other.

The prodigious number of creatures upon the earth, is, in itself, well worthy our admiration; but what should strike us more forcibly, is the proportion between all these, and the wise relations which connect this infinite multitude of different beings in such a manner that they form but one regular and perfect whole.

The extent of the animal kingdom is incomprehensible, and yet all creatures find sufficient nutriment. No species, however few there are of them; no individuals, however persecuted they may be; are ever extinct. It is true, that many serve as food to others; but the number of beasts of prey is not considerable: most of them are solitary, and do not multiply rapidly. Those even that are most numerous, are content with little food, and obtain it with much art and trouble. Several of them have enemies, which prevent them from becoming too numerous; or else the weak and timid animals supply in number what they want in strength, and escape their persecutors by all sorts of stratagems and cunning. It may also be observed, that for the better preservation and increase of the species, there is such an equal proportion between the sexes, that every animal finds a mate with which it may associate.

The mineral kingdom serves for the preservation of the animal, and they both tend to the good and benefit of mankind. The most useful plants, such as corn,

grow every where, multiply the easiest, and are the least liable to spoil: the animals which are most necessary to mankind are scattered every where in abundance. The productions of different climates are suited to the particular wants of mankind. Thus the hottest countries abound in cooling fruits. In regions liable to great drought, there are plants and trees which are, in a manner, springs of water, and which suffice to quench the thirst of men and animals. If in any place there be a deficiency of wood for fuel, peat and turf are found in abundance; and if some countries are destitute of rain and other sources of fertility, they are recompensed by beneficial inundations, as those of the Nile in Egypt. In mankind also, there is the most exact proportion between the sexes; the number of males being to that of females as twenty-six to twenty-five. In civil society, wealth and talents are so admirably distributed, that, as each individual may be happy, according to his circumstances, so nothing essential is wanting to society in general. If the inclinations and dispositions of men were not so varied: if their tastes and tempers did not lead them to embrace different kinds of life; if there were not such variety in their genius and way of thinking, in their beauty, riches, and other external circumstances; human society would soon resemble a melancholy desert. There is no class of men who can live without society. Each country has its peculiar advantages; and, if they were common to all, there would be neither connexion nor commerce between men. In a word, on whatever side we cast our eyes, we every where find the most admirable harmony and proportion. Notwithstanding the infinite variety of creatures, and the continual interruption of many of the laws of nature, it appears, that, in this immense universe, all is perfect, all is planned and contrived for the general good, all is in the most regular and exact order. On whatever side I cast my eyes, I see nothing but the wisest and most delightful harmony: it shines on all sides; it embellishes every thing. Nothing is unconnected: every thing combines to the same end. The whole is linked together with astonishing art.

Wise Author of Nature! we should be unworthy to contemplate the magnificence and harmony of thy works, if we did not adore thee with the most profound admiration.

During our sublunary existence we shall know only in part, and see only the outlines of thy stupendous works. What we discover is trifling, indeed, in comparison of what is hidden from our eyes; and yet the glimpse which we now have, evinces thy perfections to be impenetrable and incomprehensible. Lord! open our eyes, that we may see the miracles of thy divine wisdom. Teach us to acknowledge this wisdom in the harmonious arrangement of nature; and, above all things, teach us to admire that ineffable goodness, which has regulated the whole in such a manner as to be most beneficial to thy creatures.

APRIL XXII.

The Constituent Parts of Water.

When we drink water, we think we enjoy a pure and simple element: in this, however, we are mistaken; for naturalists assure us, that each drop of water is a little world, in which the four elements and the three kingdoms of nature are united.

There is scarcely any water which is not full of heterogeneous matter, very plainly visible when distilled or filtered. However incredible this may appear, it has been proved, beyond all doubt, by the most exact and certain experiments. Besides its elementary parts, water contains several earthy particles: such, for example, as belong to the mineral kingdom—chalky earth, nitre, and different kinds of salts. This will appear less remarkable if we consider the abundance of earthy matter which water must every where meet with, whether in the air, or in its course on the earth; which matter it either dissolves, or carries along with it. Water also contains inflammable or sulphureous parts, which show themselves when it corrupts. Without these fiery particles, it would become a solid and compact body; for, as soon as all its heat is taken from it, it condenses, becomes heavy, and acquires the hardness of ice. Lastly, that water is impregnated with air, will be easily acknowledged, if attention be paid to what happens when it begins to boil. Common water contains earth, salts, igneous particles, and air: consequently, it may be said, with truth, that all the elements are united in a drop of water. But are there also plants and animals in it? It

certainly contains the principles of vegetation, as all plants derive their nourishing juices from water, and cannot grow or come to perfection without it. As to the animal kingdom, it is evidently distinguishable in water. Without mentioning fish, and other aquatic animals, with which it is peopled, there is not a single drop of water without its inhabitants, as may be discovered by a microscope. It is also known how fast insects breed in stagnated water; the seeds of which are undoubtedly concealed in it, although certain circumstances hinder them sometimes from coming forth.

All this is calculated to make us reflect on the wisdom and goodness of the Creator. It is not by chance that water is composed of so many different parts. It would be one of the purest drinks, if it were a body absolutely simple; but, on the other hand, its medicinal qualities would be reduced almost to nothing. If we reflect on the manner in which water nourishes plants, it is easy to presume, that it communicates its nutriment in the same way to men and animals. Water is not very nourishing in itself, but, being very subtile, it dissolves the nutritive parts of food, and serves to distribute it more readily through the minuter vessels. It is, consequently, the most wholesome beverage, that which men and animals can least dispense with; and its salutary virtues are experienced on many occasions, even when all other liquids would be hurtful to the health. How grateful should we be to God for every glass of water we drink! With what wisdom and goodness has he provided for our necessities! He has prepared our food and our drink, in the manner best suited to our nature, and best calculated to preserve health and life. He has communicated a salutary virtue to the most ordinary and most necessary means of sustenance.

Let our Creator be praised, therefore, for the water he has given to allay our thirst, and to digest our food: and, supposing that we had nothing for the support of our existence but bread and water, we ought, even in that case, to be contented with, and grateful for them.

APRIL XXIII.

The Propagation of Plants.

VEGETABLES, in general, spring from seed, and, in

most plants, it is the flower or blossom which produces the seed, and makes it fruitful. Almost all flowers are folded up in a bud, where they form themselves secretly, and are guarded by their coats and external leaves. When the sap flows in abundance, particularly towards spring, the blossom swells, the bud opens, the tunics fall off, and the flower appears. At the outside some very small thin leaves are seen, of different colours, which serve to defend the organs of fertility, and perhaps also to form the nourishing juice which enters into those parts. But it is, properly speaking, in the middle of the flower that we discover the organs of fructification. We there find a stem or little pillar, called *pistil*, which rises pretty high, particularly in tulips. Round the pistil are the *stamina*, with heads at the top of them, containing a prolific dust, of different colours. These stamina are properly the masculine organs, designed to make the seed fruitful; and the pistil the female part, which receives the prolific dust.

Vegetables are also propagated by grafts. From a tender branch of a tree, when in sap, they take an eye, or commencement of a branch, with a part of the bark, and insert it between the bark and the wood; after which they gently tie up the whole, by rolling flax or soft cord two or three times round it. From this eye there comes a branch, of the same nature with the tree whence the eye was taken, though the tree into which it is inserted be quite a different sort. Trees and other woody plants are also propagated by slips. From a willow, for example, they take a slip, that is, a single stick or branch, and put it in the ground, after having cut off the little branches, that it may not in the beginning take too much sap. Roots soon proceed from these places where branches had begun to appear, and the recent slip is gradually transformed into a tree.

Lastly, vegetables are propagated by roots; but these must have eyes, or they will not shoot. Certain plants shoot forth long filaments in all directions, which have knots or eyes; and these, extending their fibres into the ground, become so many new feet, which may be separated from each other, to make so many more plants. The root even is a sort of eye, in which the plant is enclosed; and it has between its leaves little eyes, so that it may also be propagated by the leaves,

when the little eyes or roots remain fastened to them. What a variety of causes contribute to the production, preservation, and propagation of vegetables! Supposing even that the seeds pre-existed, what art is required to open them, to give growth to the plant, and to preserve and continue the species! The earth must be regarded as a fruitful mother, in whose bosom plants may be placed and nourished conveniently. Water, which contributes also to the nourishment of plants, although in a less degree, must be composed of all those parts which are best calculated to make them shoot and grow. The sun must put all the elements in motion, and by its heat make the seed spring up, and ripen the fruit. It was necessary to form a just balance and proportion between the plants, in order that they should neither multiply too fast, nor be too few in number.

It was necessary that the texture, the vessels, fibres, and all the parts, should be so disposed, that the sap might penetrate through them, circulate in them, and be so digested, that the plant might receive its proper form, size, and strength. It was also necessary to fix exactly what plants were to spring up of themselves, and what were to require the care and culture of men. The work of the generation and propagation of plants is, therefore, so complicated, and passes through so many processes, as makes it impossible to discover the long train of causes and results by which it is effected.

In all this I acknowledge thy wisdom and goodness, O adorable Creator! Who besides thee could communicate to the elements the necessary virtue or power to perpetuate vegetables! It is thou who hast given to the sun a proper size and heat to act upon our earth, and to make it feel its happy effects. It is thou who hast created the constituent parts of which plants are composed, and dispersed them through the air, the water, and the earth. It is thou who hast established the laws of motion; who hast formed the atmosphere, and thus produced rain, fogs, and clouds. It is thou who quickenest the seeds, and givest existence and growth to vegetables. Every year, at thy command, the earth reproduces its plants. Every spring thou renewest the face of nature, and crownest the year with thy blessings. Illustrious Creator of plants and men! may thy wisdom, power, and goodness be incessantly adored. Let the

earth, as well as the heavens, declare the glory of thy great name, now and for evermore.

APRIL XXIV.

Variety of Features in the Human Face.

It is an evident proof of the adorable wisdom of God, that, though the bodies of men are so similar to each other in their essential parts, there is so great a difference in their external appearance, that they can easily be distinguished, without any mistake. Among so many millions of men, there are not two perfectly alike. Each person has some peculiarity, either in his face, voice, or manner of speaking, which serves to distinguish him from all others. The variety of countenances is the more wonderful, as the parts which compose the human face are but few in number, and are all disposed on the same plan. If all things had been produced by blind chance, the faces of men might have resembled each other as nearly as eggs laid by the same bird, balls cast in the same mould, or drops of water out of the same bucket. But, as this is not the case, we must acknowledge the infinite wisdom of the Creator, which, in varying the features of the human face so wonderfully, has manifestly had the happiness of mankind in view; for if they resembled each other so as not to be distinguished, it would occasion continual inconveniences, mistakes, and deceptions in society: we should never be certain of life, nor of the peaceful possession of our property. Thieves and robbers would fear nothing from discovery, if they could neither be recognised by their features nor the sound of their voice: adultery, and every crime which disgraces humanity, would be unpunished; and we should be continually exposed to the malignity and designs of wicked men; as it would be impossible to guard against surprises, frauds, and misdemeanors. What uncertainty would there be in the execution of the laws; and in sales, transfers, bargains, and contracts! What confusion in trade! what frauds and bribery in regard to witnesses! In short, uniformity, and perfect similarity of faces, would destroy most of the charms of society, and considerably diminish the pleasure we find in conversing with one another.

From these considerations it must be observed, that variety of features constitutes a part of that infinite plan which appears in the government of the universe; and affords a striking proof of Jehovah's paternal care and goodness; for it is sufficiently obvious that not only the general construction of the body, but also the disposal of its several parts, has been executed with the greatest wisdom: every where we behold variety joined with uniformity; whence result the order, proportion, and beauty of the human body.

APRIL XXV.

God's Universal Care of his Creatures.

All the creatures which exist in the air, in the waters, and upon the earth, enjoy the care of Divine Providence; by which they live, thrive, and propagate, in their particular states; each, according to its nature and faculties, fulfilling the design of its being brought into existence. Animals void of reason, are endowed with organs, strength, and sagacity, suitable to their several destinations. Instinct warns them of what might be hurtful or dangerous, and enables them to seek, to distinguish, and to prepare, the food and habitation proper for them. All this is absolutely involuntary: it is not the result of choice and reflection; they are irresistibly led on, by a propensity, which a superior power has given them, for the preservation and support of their lives. They find suitable aliment and convenient habitations; and no species of animals is destitute of what is necessary for its welfare and sustenance. Men are of a superior nature, but they are born in a more helpless state, and require much greater assistance than most other animals: their faculties, necessities, and desires, are more numerous, and demand more care and attention: hence they are peculiarly favoured with the regard, and cherished by the blessings of Providence. The earth, the air, and the water, the clouds and the reflected light of the celestial globes, contribute in an abundant and diversified manner, towards the preservation of man. God dispenses his blessings to all intelligent beings with impartial love. He has placed the irrational creatures under their command, in order to make them serve for the support and convenience of

man. What particularly merits our attention is, that all the habitable parts of the earth furnish a sufficient degree of nutriment to the creatures which occupy them. Not only the fertile bosom of the earth, but the vast expanse of the air, and the depths of the sea, abound in food suitable for the maintenance of the innumerable multitudes that exist in those elements. The treasures of Divine Goodness are infinite. The provision which God has prepared for his creatures, is adequate to all their wants, and can never be exhausted. The world does not decay; the sun returns with its accustomed light and heat; the fertility of the earth never diminishes; the seasons succeed regularly; and the fields never fail to pay their annual tribute of provision. for the preservation and support of the animal world. Whether we consider the continuance, the profusion, or the variety, of the means of sustenance which nature every where provides, we perceive, throughout, the traces of a beneficent and universal Providence. All things which surround us, and which serve to support us, and procure the comforts and pleasures of life, are so many visible means, so many channels, through which our invisible Benefactor continually dispenses his favours. The agents of nature are the ministers which fulfil the designs of his providence: the world is his magazine, whence we draw all that is necessary; and it is to his goodness and tender mercies, that we are indebted for all our blessings.

"Father of all beings! how extensive, how great, how inexpressible, are thy mercies! It is in thee we live, we move, and have our being; and thou sustainest all things by thy mighty word. At thy command, the dew moistens and refreshes the thorn as well as the cedar. The lot of mortals is in thy hand, and from thee alone they derive their felicity. Thou art their sovereign good; and thy paternal care extends to all mankind. Thy impartial goodness causes the sun to rise upon the unrighteous, even in the moment that he offends thee. It is by thy command that the zephyr cools and refreshes us; that the rose embalms the air with its perfume; that the most delicious fruits please our palates; and that the dew of heaven revives us. Thy gifts are proportioned to the necessities of thy creatures, and the righteous experience the salutary influences of thy

grace. Thou givest to the bee the nectar of the flowers; to the worm, the drop that allays its thirst; and to the world, the cheering rays of the sun. O Thou who possessest sovereign felicity, and dost not disdain to communicate happiness to the poorest insect, which could not exist a moment without thy support; permit me to sing a new hymn to thy praise, and condescend to accept my feeble accents. Penetrated with joy and gratitude, I would celebrate thy name, magnify thy goodness, and ascribe to thee incessant adorations, praise, and glory."

APRIL XXVI.

Flowers which bloom in April.

THE nearer we approach that charming month which presents to us the country, the fields, and gardens, in full beauty, the more we see the wild and melancholy aspect of nature wear off. Every morning brings forth some new creation: each day nature approaches nearer to perfection. Already the grass begins to shoot, and the sheep run eagerly to feed. The corn begins to appear in the fields, and the gardens become cheerful and pleasant. Here and there the expanding flowers court our attention. The sweetly modest violet, one of the first children of the spring, regales our senses with its delicious odours; and the flowerets of the beauteous hyacinth insensibly rising above the leaves, delight us with the richness of their tints, and the fragrance of their perfume. The imperial-crown flower casts around it a multitude of starry leaves: its stem rises high; and its red and yellow bell-shaped blossom, inclining towards the earth, forms a sort of crown, surmounted by a tuft of leaves. From the midst of its foliage, the auricula raises its stem, supporting a bunch of flowers, the circular edge of which exceeds the richness of velvet and the softness of satin; and the elegance of its form and the sweetness of its perfume, amply compensate for the shortness of its stature. The tulip comes out more slowly: it does not yet venture to open, because the night air, or cold rains, might spoil the brilliancy of its colours. The ranunculus, the pink, and the rose, do not blow, till milder days allow them to appear in full beauty.

An attentive observer will find many reasons to admire the wisdom and goodness of his Creator. It is for very wise purposes that, at the return of spring, each plant begins, precisely in the time and the order prescribed, to unfold its leaves and flowers, and to prepare every thing for the production of its fruits. There is a constant succession of vegetables from the beginning to the end of the year. Some are scarcely visible when others prepare to appear; and these are followed by several hundreds of others, which spring up, each in its turn, at the appointed time. Whilst the fruit of one plant is ripening, nature excites another to propagate, that its fruits may be ready by the time the former has fulfilled its destination. Thus nature continually presents us with an agreeable succession of flowers and fruit. She leaves no void; and, from one end of the year to the other, she watches over the successive generations of plants.

But why has not our Creator given us the enjoyment of more plants at once? The reason is evident: for if all the flowers and fruits came at the same time, would there not be seasons entirely destitute of vegetables? Should we not be deprived of the pleasure which those agreeable and progressive changes procure us, by preventing the disgust inseparable from sameness? How many plants would perish, if they were now exposed to the cold nights which are sometimes felt in the commencement of spring! Would so many millions of animals and insects find subsistence, if all the plants blossomed and bore fruit at the same time? The beneficent Creator proposed to make provision for our support, and to contribute to our pleasure; and to fulfil these two designs, it was indispensably necessary that the different species in the vegetable kingdom should be produced, not at the same time, but successively and by degrees.

The spring flowers which we, at present, contemplate with admiration, should lead us to reflect upon the spring and blossom of life. In these gay and brilliant tribes, youth may behold an image of themselves. Like them they are placed in a fertile soil, and have a thousand charms for which they are beloved and admired: but as the cruel north wind sweeps over the fairest flowers, blasting, in its course, the sweet violet,

the rich hyacinth, and the elegant auricula; so it should be remembered that the pride of beauty and the vivacity of youth, are frequently nipped in the bud. Young man, be not vain of thy form. Do not venture to join too soon in the sports of thy companions, perhaps more robust than thou art. Be not vain of the flower of thy youth. Life is like unto grass: it flourisheth as the flowers of the field: "As soon as the wind goeth over it, it is gone, and the place thereof shall know it no more*."

APRIL XXVII.

Return of the Birds.

At the commencement of winter, whole tribes of birds emigrate to other countries; some in search of a warmer climate, and others to find convenient asylums from the rigor of the air, in caves, excavations, and other sequestered places. Those volatiles return to us as the gentle mildness of the spring advances; some being awakened from their torpidity, and the others brought back by a secret instinct from those distant regions which have supplied their temporary wants: it is also worthy of remark, that those which retire latest are generally the earliest in their return. The air will soon be re-peopled with its feathered choristers; the nightingale will fill the groves with sounds of melody, the twittering swallow will resume her former nest, and the stork return to the habitation which she quitted at the beginning of winter. In a few weeks the skies will resound again with the songs of birds, and their return will fill the plains and the valleys with joy and gladness.

Two things particularly are remarkable in this emigration of birds. The first is, that they know exactly the time when they ought to return: "The stork in the heavens knoweth her appointed time; and the turtle, and the crane, and the swallow, observe the time of their coming†." Undoubtedly, the temperature of the air, in respect to heat and cold, and the natural inclination of those creatures to produce and to bring up their young, are their greatest motives for changing their place; but it is, in other respects, a very extraordinary

*Psalm ciii. 15, 16. † Jeremiah viii. 7.

instinct, and in some degree inexplicable. It is no less wonderful, that those animals, void of reason, know so exactly what route to take, and how far to go. Without compass, guide, or provision, they undertake and finish, in the most regular order, a journey of several hundred miles. Who has taught them to follow a certain tract in an element so unconstant as the air? Who informs them how far they have travelled, and how far they have yet to go? Who is it that guides, feeds, and furnishes them with all necessaries for their journey. Do not these animals effect what men themselves would be unable to do? To undertake journeys of such a length, what experience, what assistance, what directions and preparations, we require! Can we, even with the assistance of our reason, with a compass, and geographical maps, follow so invariably the road over seas and mountains, as the birds do without assistance?--In whatever light we consider these facts, we plainly discover a power superior to mere animal instinct, and are compelled to acknowledge, that an Almighty Being has impressed on the minds of these birds, an impulse which they blindly obey

O Lord! we here discover thy sacred influence. Thou hast appointed to each of these animals the country, and the identical spot, where he may find nutriment and habitation. Thou hearest their cries when they stand in need of food, and thy merciful hand conducts them safely through their distant migrations.

Great and adorable Parent, may I be enabled to cast myself and all my concerns into thy hands, with the most filial confidence. During my earthly pilgrimage, vouchsafe to lead me in the way which is pleasing to thee, and suffer me not to murmur in the course of my journey. Directed by thee I shall fear no evil, but trust, through thy goodness, to find with my subsistence, some degree of repose and comfort. Should my sublunary life prove restless and wandering, do thou cheer me with the hope that I shall eventually arrive at the regions of consummate happiness and undisturbed tranquillity.

APRIL XXVIII.

Utility of Forests.

During the winter, which has just passed, we experi-

enced the great advantages of forests; as they furnished us with a provision of fuel at a time when we could not otherwise have guarded ourselves against cold. But it would be a mistake to suppose that this is their only, or even their principal use; for if God had proposed no other end in creating them, why should those immense forests exist, which form an uninterrupted chain through whole provinces and kingdoms, and of which the smallest part is used for firing? It is, therefore, evident, that the Creator, in forming these vast forests, proposed to himself to make them of use to mankind in other ways. Perhaps one end of their creation may be the pleasure we derive from their appearance. They form one of the greatest beauties of nature; and it is always regarded as an imperfection in a country to be destitute of woods and thickets. Our impatience, when the leaves in spring are backward in appearing, and the pleasure we feel when they begin to unfold, make us sensible how much they adorn and embellish nature. In reflecting on the use of woods, we ought not to forget the fruits which numerous species of trees produce. It is true, there are some, whose fruits do not appear to be of any direct use to men; yet the trees themselves are valuable, on account of their beauty, their shade, and their timber. It will also appear, upon proper reflection, that those trees which we call *barren*, are, notwithstanding, of great utility. They nourish and support an infinite number of insects, and these become food for birds, which are designed to afford us the most exquisite dainties. The acorns of various species of oak, chesnuts, and similar productions, are the favourite food of pigs and wild boars: and have we not experienced, that these fruits, when properly prepared, may even serve as sustenance for man? They serve, besides, to preserve seeds for the forests. How many animals would be deprived of their proper food and habitations, if there were no forests! How many conveniences, utensils, and medicines, should we be deprived of, had we not the wood, the bark, and the roots of trees! and how cheerless and uninteresting would the face of the earth appear, were it not diversified with fields and forests, plains and woods! Forests, therefore, are of so much use to mankind, that nature has taken upon itself the care of perpetuating them. If their preservation

and increase had been left to the industry and vigilance of man, the woods must have been at an end long ago. But the Creator reserved the forest trees to himself. He alone planted, and he alone supports them. It is he who disperses their little seeds over an extensive country, and gives them wings, that they may be more easily wafted by the winds to the distant places destined to receive them. He alone causes those vast trunks to shoot out, and rise so majestically in the air, that their tops seem to reach the very clouds. He alone has planted them so firmly, that their branching roots enable them to resist the utmost efforts of the winds, and to brave the storms of revolving ages; and he alone brings the rain and the dew out of his treasures, to clothe them every year with fresh verdure, and to maintain a sort of immortality among them.

Merciful Father! thy goodness extends over all the earth, and every region, however remote or wild, exhibits vestiges of thy wise and beneficent government. In all situations, in fields as well as in forests, in the barren desert and in the flowery plain, thou hast erected monuments of thy goodness, because thou art the God of love and mercy. Now that the genial season approaches, in which we may walk under the lofty and umbrageous oaks, we desire to lift our hearts to thee, and to sing hymns of gratitude to thy holy name. O Lord! help us to magnify thee for thy blessings in general, and for the forests which thou hast created for the benefit of thy creatures.

APRIL XXIX.

Pleasures which the Contemplation of Nature affords.

Nature offers to all her children, with maternal goodness, the first, the most innocent, the least expensive, and most universal, of all pleasures. Such our first parents enjoyed in Paradise; and it is only the depravity of man which makes him seek other recreations. Men are apt to despise the daily blessings they enjoy, however excellent; and they only think of multiplying and varying their amusements. It is certain, however, that the pleasure I speak of is preferable to all others;—it is almost impossible not to find charms in the contemplation of nature. And that it may be enjoyed without

expense, is manifest: the poor, as well as the rich may indulge in it. But this is the very circumstance which depreciates its value. We are foolish enough to disregard that in which others have an equal participation; whilst, if we were reasonable, nothing would give more value to a blessing than the thought that it contributes to the happiness of our fellow-creatures as well as our own. Compared with this noble and sensible pleasure, how vain and frivolous are those far-fetched amusements, which, after being obtained with so much trouble and expense, leave a certain vacuum in the soul, and always end in vexation and disgust! Pleasures which are only the work of our own imagination, are of short duration, and vanish like a dream; the charms and illusions of which are lost at the moment of waking: but the pleasures of reason and of the heart—those which we enjoy in contemplating the works of God—are solid and lasting, because they open to us an inexhaustible source of new delights. The starry sky; the earth enamelled with flowers; the melodious songs of the birds; the various landscapes and prospects, vying with each other in picturesque beauty; may continually furnish new subjects of satisfaction, and fill our souls with delight. If we are insensible to these, it is certainly our own fault; it is because we behold the works of nature with an inattentive and indifferent eye. The duty of a Christian consists in enjoying, innocently, all that surrounds him. He knows how to draw resources from every thing, and has the art of being happy under any circumstances, at little expense, and without danger to his virtue.

Beneficent Creator! thou rememberest us in this lovely season, and providest for us an abundance of the most solid pleasures. A thousand sources of delight are open, and joy and gladness surround us on every side. If we wish to raise ourselves to thee, to indulge holy meditations, to feel celestial pleasures, all nature furnishes the opportunity. May we ever prefer this noble enjoyment to all sensual pleasures! In these days of spring, may the sight of beauteous nature affect us more than those seducing pleasures which only flatter the senses without interesting the mind! Lord teach us to acknowledge and to feel thy power and goodness; that, in studying to find thee in all thy works, we may open

to ourselves a pure and inexhaustible source of delight, and enjoy a foretaste of that fulness of joy which we shall experience in thy presence for evermore!

APRIL XXX.

Animals should lead Men to glorify God.

It is not sufficient to refrain from abusing animals; we should also make the best possible use of them: and how can this be done so completely as by making them subjects to glorify God? All creatures may lead to this, but particularly those which are animated. On every plant, tree, flower, and stone, the greatness and glory of the Creator are visibly imprinted; and we need only to open our eyes to see it. But in the animal kingdom it is more particularly obvious. Examine the construction of one animated being. What art, what beauty, what admirable wisdom shall we discover! And how will these wonders multiply, if we think of the almost infinite number and astonishing variety of animals! From the elephant to the smallest mite, which is only visible through a microscope, how many degrees, how many links are there which form one immense chain! What connexion, order, and relation between all those creatures! All is harmony! And if, at first sight, we think we discover any imperfection in certain things, we soon find it was only our ignorance which led us to form an erroneous judgment.

It is not necessary that each individual should become a profound naturalist, or make deep researches into the nature of animals; on the contrary, it may suffice to attend to the most familiar objects, and such as come under the observation of all. We see, for example, a multitude of animals, all admirably formed; which live, feel, and move, as we do; which, like us, are liable to hunger, thirst, and cold; and which, consequently, require that their wants should be regularly supplied. To all these creatures God has given life, he preserves their existence, provides for their wants, and watches over them, as the master of a family over his household. May we not hence conclude that God has the goodness, the tenderness of a father? Shall we not also conclude, that we ought to *love* this God, who is mercy itself! If the Creator extend his care to animals, what will he not

do for us? If it be his study to render the lives of these creatures happy and easy, what may *we* not expect from his beneficence? Let the timid and distrustful man blush at his anxieties—he who, as soon as he finds himself not in affluence, falls into apprehensions, and fears that God will let him perish for want. That beneficent Being who supplies the wants of so many animals, will he not furnish us with all that we require?

Let us indulge another reflection upon the instinct of beasts, and thence take occasion to admire and adore that great Being who so wisely combines the means with the end. As the instinct of animals tends to their preservation, it appears most evidently in the love and tender solicitude which they feel for their young. Our Lord himself, to express the most tender and paternal care, makes use of the image of a hen gathering her chickens under her wings. It is, indeed, a most affecting sight to behold the natural and strong affection which the hen has for her young ones, and the constant care which she takes of them; she never takes her eyes off them: she runs to their assistance at the least appearance of danger; flies at the aggressor with astonishing courage; and hazards her own life to save that of her chickens: she calls them and encourages them by her maternal voice; she spreads out her wings to receive and conceal them; she neglects all sorts of convenience to herself; and, in the most uneasy posture, she thinks of nothing but the safety and welfare of the objects of her affection.

Who does not here acknowledge the hand of God? Without the maternal care of the hen, without that instinct, so superior to every thing, the chickens, the whole species, would infallibly perish. Can it be said, that what the hen does for her young is the result of understanding and reflection; that she judges, reasons, foresees, combines, and draws consequences? Certainly not. And though, at first sight, every thing seems to proceed from the tenderness and understanding of the bird, yet we must acknowledge in it a superior hand, which shows itself without our knowledge in what manner it acts.

These examples are sufficient for the proposed end; therefore, without extending the subject further, I will conclude in a few words: It is the indispensable duty

of man to seek in the brute creation to glorify God; and this duty we should ever hold sacred, as it will constantly prove both instructive and delightful.

Hymn on the Beauties of Spring.

Blessed children of God! open your hearts to joy! contemplate the bounteous gifts and gay attire of spring: behold the rich verdure of the fields, and gaze on the flowery meadows, whose fruits will shortly present you with the sweets of abundance.

Yonder tree, which, a little time ago, seemed destitute of sap and life, is now covered with blossoms that promise an ample produce. How beautiful is Nature! How graceful her ornaments!

In this charming season, every meadow, wood, and field exhibit the most cheerful aspect, and, together with men and animals, seem to rejoice in a new existence. The lark soars aloft till his melodious carols seem lost in the fleecy clouds; the pigeon quits her winter retreat, to fly round the enamelled plain; and the sweetly plaintive notes of the nightingale pour from the umbrageous groves, and vocalize the adjacent hills and valleys. The swallow flies abroad in quest of sustenance, but hastily returns to her nest, the dear repository of her expecting offspring; while the domestic hen guides, protects, and shelters with her expanded wings, the tender little ones which nature has intrusted to her maternal care.

The corn shoots up in abundance, while the industrious husbandman and his children anticipate the blessings of the future harvest. Men plant, but the vivifying rays and fertilizing showers descend from heaven. The heat of the sun matures the fruits of the earth, and causes the animating juice to flow from the vine. Thus the most abject among the sons of men, when animated with celestial life, becomes an honour to humanity, and a herald of the glory of God.

Almighty and adorable Being! whilst I contemplate thy divine goodness, as evinced in all the circumstances of the present life, may I be enabled to anticipate that future and supreme felicity which thou hast reserved for all who repose their confidence entirely upon thee!

MAY I.

The System of the World.

Of all the constituent parts of the mundane system, the sun is, indisputably, the most interesting. His form is spherical; he seems to be composed of an igneous but inconsumable matter, and, by the aid of a telescope, certain spots are discoverable, which prove that he revolves round his axis. His distance from the earth is upwards of ninety-five millions of miles, and he is a million of times larger. He communicates his light to at least twenty opaque globes, which revolve around him at different distances, and are called *planets*. The nearest to him is Mercury, who, being almost buried in the solar rays, is seldom seen, and little known. Next is Venus, who is called *Lucifer*, or the morning star, and *Hesperus*, or the evening star, because she sometimes precedes the sun, and sometimes follows after him. Next to Venus comes our globe; the external surface of which is composed of land and water, mountains and valleys; and the interior part consists of beds or strata of different substances. This earth is the abode of a multitude of creatures, both animate and inanimate, plants, metals, and minerals. The moon turns in a particular orbit round our globe, and accompanies it in the whole circle it describes round the sun. She is about fifty times smaller than the earth, and on her surface we discover a variety of spots, some lucid and brilliant, others obscure and gloomy; the first supposed to be continents, and the other seas or deep valleys. If the moon were composed only of one substance, if she were a body entirely solid, or entirely fluid, she would reflect the rays of the sun all the same way, and we should not see those spots which are now discernible in her. A fluid body, such as water, absorbs a great number of rays, and only reflects a few: it is, therefore, very apparent that the dark parts of the moon are seas, which absorb the rays of light; or deep valleys, into which the rays are precluded from falling by the mountains; and that the luminous parts are land. Amongst these lucid parts, some are more brilliant than others, and even cast a shadow. They must therefore be higher than others, and resemble our mountains. Some of

these mountains seem unconnected; others are contiguous, and form very long chains.

The four last planets of our system are, Mars; Jupiter, with his four moons, or satellites; Saturn, with seven; and the Georgian Sidus, with six moons. Saturn is at such an immense distance from the sun, that he is nearly thirty years in performing his revolution. This vast dominion of the sun, however, which, taking in Saturn only, extends to more than nine hundred millions of miles, is but a *part* of the universe: for each of the fixed stars, the number of which is, perhaps, more than the grains of sand on the sea-shore, may be considered as a sun, which, if it do not surpass ours, at least equals it in size and splendor, and its influence may probably extend still farther.

Thus we perceive the wonderful greatness of God! and thus the heavens declare the glory of the Lord! Is there any thing in nature more proper to inspire us with sublime ideas of the Deity, than the sight of the celestial vault? Can we ever raise our eyes to heaven, without feeling the most lively sense of the magnificence and greatness of Him, who gave being to all things, and who governs them with incomprehensible power, wisdom, and goodness? What are *we*, poor miserable mortals, who crawl like insects on a grain of sand, and are lost in the immensity of the creation! What are *we*, in comparison of those innumerable systems, which contain so many vast globes within their circle! What are *we*, especially in comparison of the *Creator* of all those worlds, suns, and skies, which, if we attempt to measure, trouble and confound the understanding! And yet this sovereign Ruler of the immense universe deigns to honour *us* with his protection and paternal care. How adorable are his mercies! Let us prostrate ourselves at his footstool, and praise him in the firmament of his power.

MAY II.

Reflections on the Blossoms of Trees

At this instant, in which our gardens and fields are adorned with all the ornaments of spring, all Europe appears with equal pomp, and every where presents the most cheerful aspect. The eternal word of the Crea-

tor, pronounced when he formed the world, has produced all these magnificent effects. One hand alone, that of the Creator and Sovereign of the world, has, in a few days, renewed the earth, and in a measure created it anew, for the use and pleasure of his intelligent creatures. It is God alone who calls forth the spring, and orders it to appear. Approach, O mortal! and try what thy wisdom and power can effect. Art thou able to make a single tree blossom? to call from the earth the smallest blade of grass? to order a single tulip to appear in all its splendor? Approach, ye learned artists, ye skilful painters, and contemplate these flowers; examine these master-pieces with the most scrupulous attention. Is any thing wanting to their perfection? Can you discern any fault in their forms, their proportions, or the blending of their colours? Can your pencil express the lustre of the blossoming peach, or imitate the elegant tints of the cherry-tree in bloom? So far from *imitating*, you are unable to *conceive* all the magnificence of renovated nature. If there were no other proofs upon earth of the power and wisdom of God, the flowers of spring alone would be sufficient to convince us of it. His power evidently appears throughout the whole. Each tree that blossoms, each herb and flower, proclaim that goodness and wisdom which is so abundantly diffused over all the earth. We remark an infinite variety in the blossoms of trees: all are beautiful, but their beauties are different. One surpasses another, but there are none which do not possess some beauty peculiar to themselves. However great the Creator may be in dispensing his gifts, he still reserves to himself the liberty of bestowing more on some than others. But this difference is only in respect to accessary qualities. Such a tree, for example, has blossoms of a dazzling white; another has red stripes and shades; while others add to their beauty the most exquisite perfume. But all these differences are only accidental, and do not in the least affect their fertility. From the contemplation of these circumstances, we may derive profit and instruction. We may consider that though the Almighty deny to *us* those advantages which some of our fellow-creatures possess, it does not become us to be either afflicted or discouraged; for the loss of some accidental beauties, of whatever nature they may be,

cannot prove injurious to our real welfare. If we be not as opulent, as well formed, or as highly respected as others, we may, nevertheless, be as happy, as virtuous, as pleasing to God, and as useful to man. Provided we bear the fruits of piety and righteousness, we possess true beauty. Why do the blossoms of a tree please us more than the rich colours of a tulip, an auricula, or a ranunculus? It is because the pleasure we receive from viewing the latter is of short duration; whereas the others give us hope of delicious fruit. Let us not, therefore, confine our wishes to the exterior charms of a beautiful flower. The bloom of health, the graces of symmetry, and other outward advantages of nature, are not the things which afford durable and permanent pleasures. The blossoms which promise fruit agreeable to God, are what truly merit our esteem; and these are they which will never fade.

It is a melancholy thing to consider, that all those dazzling beauties we now admire in the blossoms on the trees, will disappear in a few days: and yet such will be the fate of all those blooming youths, who are now so vain of their charms. Let this thought ever attend us in the solitary walks we take in our gardens: and let it be our principal study to act in such a manner, that, when the external charms of the body are no more, we may supply their place with abundant fruits of virtue and piety.

A tree which has been covered with beautiful blossoms, but which disappoints our expectation of fruit, and only serves to injure the growth of the plants around it, is regarded with indifference, if not with contempt. And it is truly melancholy to see a person, who, in the spring of youth, was adorned with all the charms of person and the gifts of fortune, not only bearing no fruit in the summer or autumn of life, but becoming a hindrance to the fruitfulness of others.—Should we arrive at that period when God and our fellow-creatures have a right to expect much fruit, may every blossom of youth prove productive of exemplary piety. Then shall we enjoy the approbation of our fellow-creatures, and receive the benediction of our heavenly Father.

MAY III.

Continual Revolutions and Changes in the Earth.

CHANGE and motion seem absolutely necessary to the preservation of the corporeal world. Not a particle of matter in the universe can be considered perfectly at rest, as the slightest attention to what passes on our globe will suffice to demonstrate.

The earth turns round its axis every twenty-four hours; and, by this motion, all the points of its surface (except the poles), change place with more or less rapidity. Under the line or equator, where this motion is the swiftest, every thing passes through more than one thousand miles an hour, though it does not change its situation on the surface. But, besides this, the earth makes it annual revolution round the sun, with so much velocity, that, according to the most moderate calculations, it goes through fifty-eight thousand miles every hour, though its course is not perceptible. The relative motion of earthly bodies is more observable. Little rivulets unite, and form greater: these, in their turn, form torrents and rivers; which are afterwards lost in the sea. Water is also raised in exhalations, and forms clouds, which produce rain, snow, and fogs: these form streams, which return into the sea; and tides, storms, and torrents, keep the water in continual motion.

The atmosphere, likewise, is in continual motion. An east wind blows incessantly between the tropics; and, though in other places the motion is not always perceptible, yet the barometer and thermometer prove that the air is not perfectly calm, and the frequency of meteors, of different kinds, sufficiently demonstrate that nature is never at rest. The surface of the earth is also subject to frequent revolutions: the hardest rocks split; stones gradually wear away; lands fall in, or are overflowed; certain grounds rise, and others are overturned by earthquakes; little hills are washed away by the waters; valleys are filled up; marshes become dry, and are covered with trees; and the bottom of the sea becomes firm ground. Light and darkness, cold and heat, drought and wet, succeed each other by turns. Lastly, the continual variation of heat occasions every hour, changes in different parts of bodies, though often

imperceptible. If we add to this the changes visible in animals, we may have some idea of the continual revolutions to which every thing here is subject. It is said, that man loses about two ounces and a half daily by perspiration. This is replaced by other particles; so that, at the end of ten years, a man's body is entirely changed. All animals and plants are nourished, grow, propagate, die, and corrupt.

Thus, every thing on our earth is in motion; every thing grows and perishes by turns. In a word, to be *born*, and to *die*, is the sum of all that passes on the theatre of the world. But this does not happen, as at first sight might be imagined, accidentally, or by chance, without order or design. Every thing acts according to certain laws, which tend to certain ends. Every thing combines, every thing concurs, in the most perfect manner, to the glory of the Creator. All contributes to, and terminates in, the happiness of the universe.

These continual revolutions are useful warnings to us, as they teach us that this present world cannot be our place of final destination. When we consider the continual vicissitudes which all on earth must undergo, is it not a most affecting lesson, on the vanity of all terrestrial things, on the uncertainty and shortness of life, on the necessity of a better and permanent state in the world to come? Yes, every thing points out our true destination, and loudly proclaims that we are but strangers and pilgrims on the earth.

What a consolation is it in the midst of the revolutions of the world to lift up our eyes to God, who is both immutable and eternal! Let the mountains be shaken, and fall down; let the sea be troubled, and the waves roar; let all earthly bodies be destroyed, and return to their primeval dust; still He is, and ever must be, invariably the same.

The time allotted to me as a spectator of these revolutions may probably be very short. Should this be the case, vouchsafe, indulgent God, to receive me into those blissful regions where there shall be no vicissitudes of day and night, nor any variation of the seasons. Then I shall enjoy the light of thy countenance, and contemplate thy glories, in perfect and uninterrupted felicity.

MAY IV.

An Invitation to seek God in the Works of Nature.

AWAKE, O my soul! awake from the slumber in which thou hast been so long immersed, and regard with attention the objects which surround thee. Consider thyself and all other creatures. Reflect on their origin, construction, form, utility, and a thousand other circumstances, which must fill every attentive observer of the works of God with admiration. When thou seest the brilliant and variegated colours of the sky, the lustre of the numerous stars which irradiate it, and the rays of light reflecting from a thousand interesting objects, ask thyself, whence all these proceed? who formed that immense expanse of heavens? who placed in the sky those innumerable fires; those stars, which, though at so prodigious a distance, dart their rays even unto us? who ordered the planets to move with so much regularity, and the sun to enlighten and fertilize the earth? Was it not our adorable Creator? Yes, it was his powerful word which called all these objects out of nothing, and wisely ordained them to continue in existence! How stupendous the greatness, how incomprehensible the power which formed all these things! and how infinite the goodness which arranged the whole in such a manner as to be most conducive to our felicity!

Ye lofty mountains! what powerful hand established your firm foundations, and elevated your summits above the clouds? Who adorned your sides with groves and forests, and beautified them with flowers and verdure? Who covered your heads with a mantle of eternal snow? And who drew from your bosoms those springs and rivers which moisten and enrich the earth? It was the hand of Jehovah which wrought all these wonders; and that divine hand I desire to adore, with sentiments of admiration, respect, and gratitude.

Flowers of the field! who gave you your magnificent clothing? how happens it that you are produced out of a little earth and a few drops of water? whence have you that variety of perfumes which embalms the air and delights our senses; those vivid colours which charm our sight, and which no human art can imitate? This

is thy work, O Lord! every thing on the earth proceeds from thee.

And you, O animated beings, which people the air, the waters, and the land! to whom do you owe your existence, your construction, and those various and wonderful instincts which astonish our reason, and are so well adapted to your different modes of life?

But, what a multitude of wonders may I observe in myself! How does a handful of dust become a body, well organized? How is it that one of its parts has sight; that another, by means of the undulation of air, is informed of the thoughts of people; and that a third tastes the different flavors of food? How is it that I have the faculty of communicating my ideas and desires? How does a little matter bruised by my teeth afford me so many agreeable sensations? I acknowledge the hand of my Creator in all these incomprehensible wonders. His wisdom, power, and goodness, all combine to render me happy.

Infinite God! may it be my most highly prized duty to contemplate and acknowledge thee in all thy works; since every object in the heavens and upon the earth, leads to thee, or serves as a memento of thy power, wisdom, and goodness. The best use I can make of these charming days of spring, is, in the midst of the revolutions which are now taking place in the earth, to lift my eyes to thee, who, in every season, openest thy liberal hand, and satisfiest the wants of all thy creatures. And while I muse upon thy majesty and benevolence, may I be enabled to bless thy name with transports of gratitude, and reverentially to extol the miracles of thy wisdom. O! that it may henceforth be my most pleasing occupation, to declare thy goodness, and to sing of thy mercy before all thy people!

MAY V.

The Dawn of Day.

The morning dawn discovers to the world a new and magnificent creation. The shades of night deprive us of the sight and enjoyment of the heavens and the earth; but when the light of day returns, we behold all nature renewed and embellished. On a sudden we see the earth arrayed in all its magnificence; the mountains crowned

with forests; the hills clothed with vines; the fields covered with yellow grain, and the meadows watered with rivulets.

The horizon literally glows: the clouds are tinged with the liveliest colours; flowery vales are discovered at a distance; the light vapours are converted into gold; and the dew-drops which rest on the expanding flowers assume the mild lustre of pearls. By degrees, as the light increases, the spectacle becomes more superb, till, at last, nature presents us with her most glorious object.—The Sun rises; and the first ray that escapes over the tops of the mountains, darts rapidly from one end of the horizon to the other. New rays follow, and strengthen the former; till, by degrees, the disk of the sun shows itself entire; then advances farther into the sky, and runs its course with a majesty which the human eye can no longer sustain! Were any one to see, for the first time, this fascinating scene from the top of a hill, what would he think? what would he do? Doubtless he would prostrate himself, full of sweet emotion and pious respect, to adore that God who is the Author of the sun; and, in the beauties of the rising day, to acknowledge his power and wisdom. With the lark, which, soaring in the air, salutes the morn, and proclaims its arrival by the sweetness of its notes, he would soar towards thee, O Lord! who art the Father of the whole creation. The joy and gladness of all nature, the animation of every being, invite us to raise our souls towards thee with the most lively transports of gratitude and joy. At this moment, while the sun is darting its first rays upon the earth, millions of creatures praise and adore thee. From thee proceeds each beauty of the morning dawn; from thee, who art the source of light. It is thou who hast given it these lovely colours, and impressed a sense of them on our souls! Thou hast given us souls of a heavenly nature, capable of tracing thee in all thy works. Our eyes seem to behold thee in the splendor of the rising sun.

But how much are those indolent men to be pitied, who never afford themselves the heavenly pleasure of contemplating the rising sun! Oh! were they but rational enough to indulge in the pure and delightful enjoyment which this magnificent object of nature is so calculated to inspire; could they but feel that the sight

of beauteous nature must fill the heart with pious delight and profound veneration for the Creator; could they, in fine, comprehend, that one single thought which rises in the soul on seeing the dawn of day, may become the happy beginning of a virtuous life; would it not amply recompense them for a few hours snatched from unnecessary repose?

MAY VI.

The Wonders of Vision.

These rays, which enter the eye, pass through the cornea, the aqueous humour, and the pupil, into the crystaline lens. After having been sufficiently refracted, and then reunited in their passage through the vitreous humour, they impress on the retina the images of exterior objects, with the utmost precision; and the optic nerve which terminates in the retina, conveys these impressions to the mind, and produces perceptions and ideas conformable to the different sensations excited by the object presented. Hence it will appear, that the faculty of vision is one of the most wonderful properties of human nature, and well deserves to be more particularly considered. The images of external objects are painted upon the retina in an inverted position, and yet we see them in their real situation. How is it that the largest objects are painted in our eyes extremely small, and yet we see every thing according to its real size? How is it, that, when we see, from a high tower, some hundreds of houses below us, in a great city, each of them is painted so exactly in our eyes, on a space which is scarcely three times as large as the head of a pin? So many millions of rays come through a very small aperture, and collect together on the retina which lines the inside of the eye, without the least confusion, though they preserve among themselves the same order with the parts of the objects from which they proceeded. But this is not all: let a person from the top of a high mast, contemplate a fleet in full sail; or let him view the sea itself—how many millions of waves will he discover! *Each* of these reflects an immensity of rays upon the eye, which, notwithstanding its smallness, distinctly receives the whole. Again: let any one go to the top of a mountain in a clear day, and view the cir-

cumjacent country; each tree, each plant, and every blade of grass, sends rays of light to the eyes, without which it would be impossible for us to discover that continued verdure which appears in every part of the landscape below us. Is it not also very astonishing that we do not see double; and, though we have *two* eyes, each object appears *single*? Another cause of admiration is, that those objects which we see are not only visible to *us:* we are surprised at the number of rays they send to so small a space as the pupil of the eye, yet they convey as much to spaces of that size every where. It is for that purpose, that, wherever we go, new rays supply the place of the preceding, and render the same objects visible which we perceived previously to our changing place. The rays necessary for that purpose already exist, and only wait to meet our eyes. But all the rays that are admitted do not take effect: along with these there are numberless others, which, being much weaker, are effaced by the splendor of the first, but are always ready to perform the same offices when required. If we perforate a sheet of paper with a pin, and look through the hole (so much less than our eye), we still see the same objects, though they may appear much smaller. But who properly reflects upon this interesting subject? The habit of discovering objects as soon as we open our eyes, causes us to consider this operation as a thing extremely simple, and easy to comprehend. We are, however, far from being able to explain the manner in which we see objects. We know, indeed, that images are impressed on the retina, and that all the parts of the eye contribute to such impressions: but this is not sufficient; for the eye can have no idea of what passes in itself: it is, therefore, necessary, that the impressions which the rays make upon it should reach to the brain: and that, in order to do so, the rays should paint the image on a coat woven with nerves, which correspond with those of the brain. In this manner the motion impressed by the rays on the nerves of the retina, is transmitted by the optic nerve to the brain. But we cannot properly describe what passes there; because we do not perfectly know either the nature of the brain, or the use of its several parts.

These wonders, which are beyond our conception, are evidently the work of Divine Power, united with in-

finite goodness, as they are all so many blessings bestowed upon us. O! that our souls may incessantly acknowledge the Creator's wisdom, and that our lips may declare the wonders of his name!

MAY VII.

Spring renews the Face of the Earth.

What a change has taken place throughout nature, and how great is the goodness of that Supreme Being, who causes the seasons to succeed each other with such perfect regularity! Our earth, which rested during winter, resumes its ornaments and its fertility. The whole creation is animated, revived, and full of joy and gladness. A few months ago, the whole surface of the earth was barren and desert. The valleys, the prospect of which is now so pleasing, were then buried in a deep snow. The mountains, whose grey tops rise to the very clouds, were covered with snow and ice, and enveloped by impenetrable fogs. In those verdant walks where the nightingale now pours forth the sweetest music, nothing was seen but withered trunks and leafless branches. The brooks and rivulets that now run murmuring along, were arrested in their course, and encrusted with ice: and the feathered choristers, which now fill the air with responsive notes, were either benumbed in caves and marshes, or compelled to migrate to other climes. A mournful silence reigned every where: and, as far as the eye could extend, nothing was seen but a dreary solitude.

Scarcely, however, has the invigorating breath of the Almighty been felt, when nature awakes from her stupor, and spreads a thousand charms around us. The sun seems to approach our globe, and the atmosphere is penetrated with his quickening warmth: the whole vegetable kingdom proves his beneficent effects; and the earth produces grass, flowers, and herbs of every sort. Now the whole face of the earth is renewed and embellished; and, at the sight of this happy revolution, we are naturally excited to look up to the great Being who is the cause of all.

"Lord, thou visitest the earth, and makest the valleys to smile. Thou sprinklest them with dew to enrich them; and the fountains whence thou waterest them are

always plentiful. At thy command our harvests ripen and fill our hearts with joy. Thy blessing rests upon our furrows; and thy rain refreshes the thirsty earth. Thou makest it soft, and blessest the seed. Thou crownest the year with thy blessings, and thy word maketh the ground fruitful. Flowers and fruits spring up under thy footsteps, and blessing and fertility are thy constant attendants. The pastures of the desert are watered, and the little hills are adorned with a beautiful verdure. The countries are covered with flocks, and the valleys are full of corn. Every place resounds with songs of joy and gladness. The praises and thanksgivings of universal nature rise to heaven itself."

In this revolution, which the spring produces, I behold an emblem of the salutary change which a soul experiences that has not resisted the operations of the Divine Spirit. Ignorance vanishes; folly and vice disappear: the passions are subdued; and the heart is filled with virtuous and religious sentiments, which delight and edify mankind.

While musing on these subjects, it is natural to inquire, Shall *I* be the only creature destitute of life, grace, or spiritual growth! Shall I continue barren and lifeless whilst the face of the earth is adorned with universal fertility! Rather let me pray that this spring of nature may become the epoch of a renovation in my own soul, that I may henceforth produce those fruits of righteousness which may be pleasing to God, and beneficial to my fellow-creatures.

MAY VIII.

The Germination of Seeds.

MANY changes in the vegetable kingdom are now taking place under our immediate inspection; but there are many more which operate in secret, and consequently escape our notice. The seed which, some time since, was deposited in the earth, now swells, and the plant gradually sprouts and shoots up. This operation seems peculiarly entitled to our attention, as it is the source of all the beauties which spring and summer exhibit in the vegetable world.

The seed is composed of different parts, according to the various species; but the principal is the germ. Each

shoot has two parts: the one simple, which becomes the root; the other laminated, which becomes the stalk and head of the plant. The body of most kinds of grain is composed of two pieces, which are called lobes, and these are filled with a mealy substance, which serve for seminal leaves to the plant. Mosses have the most simple seed of any: it consists only of the germ, without pellicles or lobes. A certain degree of moisture and warmth are absolutely necessary to make the seeds spring up. The increase of heat, and the difference observable in the taste and smell, seem to discover a sort of fermentation. By means of this preparation, the mealy substance of the lobes becomes proper to nourish the tender germ.

It is known by experiments, which have been tried with coloured juices, that this substance imbibes a moisture, which furnishes a proper nourishment, with the assistance of air and of heat, till the plant has acquired sufficient strength to profit by the juices which the root imbibes. Then the exhausted lobes dry by degrees, and at the end of a few weeks fall off, when the plant no longer requires them. Certain herbs, which grow on mountains, are of a very particular nature. As their duration is short, it would often happen that the seed would not have time to ripen. In order, therefore, that the species should not perish, the bud, which contains the shoot, is formed at the top of the plant, puts forth leaves, falls, and takes root. When the plant comes out of the earth, it would run too great risk, if it were suddenly exposed to the outward air and the power of the sun: its parts, therefore, remain folded upon each other, nearly as they were in the seed; but, by degrees, as the root strengthens and extends on all sides, it furnishes the upper vessels with abundance of juice, by means of which all the organs speedily unfold themselves. The plant is, at first, almost gelatinous, but it gradually acquires more consistence, and continually increases in size.

This epitome of the history of the germination of seeds, is sufficient to show how many preparations and means nature makes use of to produce a single plant. When, therefore, we see a seed spring up which we have sown, we must not imagine (as is usually the case), that it is unworthy our attention: for it is, in reality,

one of those wonders of nature which have excited the observation of some of the greatest of men. At the sight of this phenomenon, let us silently admire the power and wisdom of that God, who is adorable in all things. The order with which the plants so regularly succeed one another, is a proof of that wisdom which manifests itself even in the smallest things. This should remind us, that our moral nature also contains a certain seed, which shoots up with time, increases, and bears fruit. In the designs of the Creator, this was a mean to lead us to felicity; but our natural corruption and outward circumstances often counteract these merciful intentions.

MAY IX.

The Chick in the Egg.

We are under great obligations to those naturalists, whose laborious researches and patient investigations have thrown a satisfactory light upon the generation and propagation of animals. Nothing contributes more to the glory of the Creator, than the observations which are made on the wisdom that manifests itself in the production of animated beings. The less we are able to give an account of *all* his works, the more earnest we should be to take every opportunity of becoming acquainted with *some* of them. With this view, let us now consider the formation of the chicken in the egg, as it has been discovered by one of the greatest naturalists.

The hen has scarcely sat on the egg twelve hours, when some lineaments of the head and body of the embryo-chick begin to appear. At the end of the second day, the heart begins to beat, and assumes the form of a horse-shoe, but the blood is not yet perceptible. At the end of forty-eight hours two vesicles of blood can be distinguished, and their pulsation is very visible: one is the left ventricle, the other the root of the great artery. At the fiftieth hour, one auricle of the heart appears, resembling a noose folded down upon itself. The pulsation of the heart is now observed first in the auricle, and afterwards in the ventricle. At the end of seventy hours one may distinguish the wings; and on the head two bubbles for the brain, one for the bill, and two others for the fore and hind parts of the head. Towards

the end of the fourth day, the two auricles, already visible, draw nearer to the heart than they did before.—When an auricle appears first, it seems to have two horns, but this is afterwards found to be two auricles. The liver appears towards the fifth day. At the end of 131 hours, the first voluntary motion is observed. At the end of 138 hours, the lungs and stomach become visible; and at the end of 142, the intestines, the loins, and the upper jaw. At the 144th hour, two ventricles are seen, and two drops of blood, instead of the single drop which was seen before. The seventh day, the brain, which was mucilaginous, begins to assume some consistence. At the 190th hour the bill opens, and the flesh appears on the breast. At the 194th, the sternum, or breast-bone, may be seen. At the 210th hour the ribs come out of the back; and the bill is very visible, as well as the gall-bladder. The bile becomes green at the end of 236 hours: and if the chicken be taken from its integuments, it evidently moves itself. The feathers begin to shoot out towards the 240th hour, and the skull becomes gristly. At the 264th hour, the eyes appear; at the 288th, the ribs are perfect; and at the 331st, the spleen draws near the stomach, and the lungs to the chest. At the end of 355 hours, the bill frequently opens and shuts; and at the end of 451 hours, or the 18th day of incubation, the first cry of the chicken is heard. It afterwards increases in size and strength, till at last it sets itself at liberty, by opening the prison in which it has been confined.

By so many different degrees are these creatures brought into existence. All these progressions are made by rule; and there is not one of them without a sufficient cause. If, for example, the liver is always formed towards the end of the fifth day, it is founded on the preceding situation of the chick, and on the changes that are to follow. No part of its body could appear sooner or later without some injury to the whole embryo; and each of its members becomes visible at the most convenient moment. This arrangement, so wise and so invariable, in the production of this animal, is manifestly the work of a Supreme Being. But we shall more sensibly acknowledge his creative powers, if we consider the manner in which the chicken is formed out of the parts which compose the egg.

How wonderful is it, that there should be, in this egg, the vital principle of an animated being! that all the parts of an animal's body should be concealed in it, and require nothing but heat to unfold and quicken them! that the whole formation of the chicken should be so constantly and regularly the same! that, exactly at the same time, the same changes take place in twenty eggs, or more, that a hen hatches! that, when the position of an egg is changed, and it is turned from one side to the other, it does not in the least hurt the fœtus, or prevent its formation! and that the chicken, when hatched, is heavier than the egg was before! These, however, are not all the wonders manifested in the formation of a chick. The microscope and the scrutinizing observations of man have only discovered those things which come more immediately under our senses: but many things may still be reserved for those who come after us, or of which we shall not have a perfect knowledge till in a future state. How many inquiries may be made upon this mystery of generation!—inquiries which the human mind can never resolve. But let not this ignorance discourage us; let us only consider how to make a good use of our small degree of knowledge, by employing it in celebrating the wisdom, power, and goodness of our Creator.

MAY X.

On the Buds of Flowers.

On all sides I discover a multitude of flowers in the bud. They are at present enveloped and closely shut up in their intrenchments: all their beauties are hidden, and their charms are veiled. Such is the wretched miser, who lives by himself, who centres all in himself, whose views are mean and selfish; and who makes his own private advantage or personal pleasure the only object of his desires, and the narrow motive of his actions.

But soon the penetrating rays of the sun will open the buds of the flowers, and emancipate them from their silken bonds, that they may blow magnificently in our sight. With what a charming bloom will they then shine! what delightful perfumes will they exhale! Thus, the most sordid miser will become beneficent, when his soul is enlightened by God's grace. To a

heart of stone may succeed a feeling and compassionate one—a heart susceptible of the sweetest and tenderest emotions. By the mild influence of the Sun of Righteousness, the social affections discover themselves, and spread more and more. Sensibility no longer centres in one object: it becomes universal; taking in all mankind, extending its generous cares to the utmost distance, and cheering all within its reach.

The appearance of the numerous buds of flowers which now surround me, naturally leads me to reflect upon you, O lovely youth of both sexes! The beauty and power of your minds are not yet unfolded: your faculties are still in a great measure concealed. The hope which your parents and masters conceive of you will not so soon be realized. When you walk with your parents in the country or gardens, consider these buds, and say to yourselves,—I resemble that bud: my parents and masters expect from me the unfolding of my talents and faculties; they do every thing for me; they neglect nothing for my information and instruction; they watch most tenderly over my education, to the end that I may become their joy and comfort, and make myself useful to society: I will, therefore, do all in my power to gratify the pleasing hopes they form: I will take advantage of all their instructions, in order to become every day wiser, better, and more amiable: for this purpose I will take care not to give way to the desires and passions of youth, which might be fatal to my innocence, and destroy all the hopes conceived of me.

"In the morning of life I flourish like the bud which opens insensibly. My heart pulsates with joy, yields to the most cheerful hopes, and sees nothing but happiness before me. But if I am imprudent enough to give a loose to wild desire and the false pleasures of luxury, those guilty flames will soon dry up and consume my youthful heart."

MAY XI.

Indefatigable Labours of the Bee.

It is one of the advantages of spring, that it furnishes us with an opportunity of observing the industry and labours of the bee; and certainly, a beehive is one of the most interesting sights which an admirer of nature

can behold. We cannot tire of contemplating that laboratory, where thousands of artificers are employed in different works. We are in a continual state of surprise on seeing their order and regularity; and particularly in those magazines, so plentifully furnished with all that is necessary for the subsistence of the society in winter. But what most deserves attention is, the indefatigable application and uninterrupted labours of this little colony. Bees present us with an example of diligence and activity, which is not only very uncommon, but which has probably never had its equal. They begin to appear as soon as the winter is past; even when it might be feared that the cold would hurt them, and benumb their delicate limbs. When the juices of the flowers, which begin to blow, have not yet been sufficiently ripened by the sun, so as to furnish honey in plenty, the bees still gather some little for their food: but their cares and activity are evidently redoubled during spring and summer. In these seasons, they do all they can, and do not despise the smallest profits, provided they can only increase their stores. In building their cells they are so indefatigable, that we are assured a honeycomb of double cells, such as three thousand bees can lodge in, is completed in twenty-four hours. This work is divided amongst the members of the colony. While some of the bees are gathering the wax, preparing it, and filling the magazines, others are employed in different works: some take the wax and make use of it to build their cells; others knead, polish, and purify it; others extract the honey from the flowers, and lay it in the hive for daily subsistence, and for future support; and others close, with a covering of wax, the cells in which they keep their winter's provision of honey. Some carry food to their young, and shut up the cells of the little ones that are near the time of transformation, to prevent their being disturbed in working their way out. Some stop up, with a glutinous substance, all the chinks and holes in the hive, and cover all the weak places, that neither the wind nor insects may find entrance: while others drag out of the hive the dead bodies which might infect them; or, if these bodies are too heavy to be removed, they cover them over with a sort of birdlime or wax, and cement it in such a manner, that, in corrupting under that crust, they cannot exhale any offensive smell.

But it is not enough to *admire* the activity of these little creatures: we should learn to *emulate* them, and propose them to ourselves as models of industry. We have many more motives for diligence than those insects: the bee collects nectareous sweets not for herself, but for her owners: but in attaching ourselves to the precepts of true wisdom, we labour for ourselves, and gather fruit for eternal life. We have an immortal soul of inestimable value. With what application ought we to labour for its happiness, and avoid what might lead to its ruin! What is more calculated to excite us to activity and indefatigable diligence, than considering that the fruit of our labour does not merely extend to a few days and years, but to eternity itself?

Let us, therefore, never be slothful in doing good; but let us acquit ourselves of our duties with all possible zeal and fidelity. Let us accomplish without delay the task allotted us, before the winter of sickness and old age approaches, and before death has finally decided our destiny.

"O man! go to the bees for instruction, consider their labours, contemplate their works, and admire their active and unceasing industry. Ever busy, ever indefatigable, they toil from morning till evening, and cheerfully support the troubles of their short existence! And wilt *thou* repose on the lap of indolence, or consume thy time in frivolous and hurtful pleasures? Rather strive to exceed the industry of these insects, which have not received, like thee, the inestimable gift of reason. Thy life is of short duration: may it be unremittingly devoted to labour, for the glory of thy Creator, and the welfare of thy soul! The time which God hath given thee should not be consumed in indolence and effeminacy. Thou art endowed with life, strength, and reason. Sanctify them by the love of virtuous labour, and let the seasons of youth, manhood, and old age, be devoted to the service of the Almighty."

MAY XII.

How God has provided Food for Animals.

From the elephant to the mite, there is no terrestrial animal which can live without food or nourishment; from the eagle to the gnat, no bird can do without it; from

the leviathan to the smallest worm, no reptile can subsist without eating; from the whale to the oyster, there is nothing in the waters to which food is not necessary. But, in forming these creatures thus, God has at the same time ordained, that there should always be an abundance and variety proper for their sustenance. As many species of animals as there are, so many sorts of food are destined for their support: so that there is no creature on earth that does not find the food adapted to its nature. In respect to this, we may divide animals into three classes. The first includes all those which subsist on the flesh of others: some of these, as the lion, prefer quadrupeds; others birds, as the polecat; others fish, as the otter; and others insects, as different species of birds. There are some exceptions in all these; but, in general, it is certain, that each species has its particular food designed for it by the Creator. The second class comprehends those animals which seek their nutriment in the vegetable kingdom. Almost every species of vegetables is the food of some particular animal. Some prefer grass, others the fruits of trees; and, among those which live upon the same plant, there is still a remarkable difference—some feed only on the root, others on the leaf; some prefer the stalk or body of the plant, others the marrow or seed, or the whole fruit: there are some also which eat the whole plant. The third class comprises those animals which subsist on minerals; these are mostly insects; and it is rather difficult amongst them to ascertain what food such and such sorts in particular require, because those little animals cannot be so easily observed as others; it is known, however, that some of them feed on earth, others on stones; and if we consider, that there is scarcely any beast or plant which does not serve as food to some animal, we shall easily conceive that it must be the same in respect to the mineral kingdom, and that there is nothing there which does not serve, directly or indirectly, as food for some insect. I here comprehend the words of David!—"The eyes of all wait upon thee, O Lord, and thou givest them their meat in due season! Thou openest thine hand, and fillest all things living with plenteousness!" The cares of Divine Providence are evident proofs of that eternal goodness which extends over the universe. Reflect on the prodigious

number of animals which exist! How many millions of species of birds and insects, and how many hundred millions of each sort! All these creatures find their daily sustenance. How many millions of animals live in all parts of the earth! How many hundred millions of each kind find dwelling and food in the forests, the fields, the mountains, and valleys; in the caves and hollow parts of rocks; upon and in trees; in turf, in stones, &c.! What innumerable shoals inhabit the ocean! what immense numbers of fish swim in the sea, and in rivers! All these find a daily supply of food. How inexpressible the multitude, how astonishing the variety of insects which every where surround us!—millions of millions repeated! Insects in the air, in plants, in animals, in stones, and upon other insects! all constantly find their daily sustenance! How infinitely, also, does the wisdom of the Creator shine forth in his manner of providing for all these animals! He gives them all the food fit for them, and adapted to their nature; for each kind of food does not indifferently suit all animals—a particular sort is required for quadrupeds; another for birds; others for fish and insects.—This distribution of aliments is a mean wisely ordained by the Creator, to afford sufficient food for each species of animals, and to prevent any of the sustenance which the earth produces from being useless.

Now if God so provides for animals void of reason, what will he not do for man? Such is the conclusion we may, and ought, to draw, from seeing the plan of Divine Providence, which gives to all the beasts of the earth every thing necessary for their support. O man of little faith! anxious, restless, discontented man! go and reflect on the goodness with which the Lord sustains the life of animals, and let that teach thee to be content, and trust in God. Behold the birds of the air; the fallow deer on the rocks, and in caves; the fish in the sea; the animals in the fields and the forests—all find food and habitation. Great in the smallest things, as well as in the highest, God does not disdain or neglect the poorest worm on earth. Can it then be possible that *man* should be the only creature that is not the object of his paternal care and attention?

MAY XIII.

The Senses of Animals.

The organs of sense are arranged, in all animals, in a manner most conformable to their nature and design. By means of these, they take cognizance of objects, whether near or distant, and by these they are enabled to provide for their wants, and to avoid the dangers to which they are exposed.

The sense by which animals can form an idea of corporeal objects as soon as they touch them, is called *feeling;* and this, in beasts, as well as in mankind, has its seat under the outward skin, the extremities of which are covered with a multitude of nerves or sinews. It cannot be exactly ascertained what revolutions feeling goes through in the greatest number of beasts. It is even doubtful whether insects be not endowed with another sense, and whether their antennæ or horns be not the organs of a sense entirely unknown to men. Birds, fish, serpents, and some other animals, appear to have no feeling.

The organs of *taste* are principally the tongue and the palate, which receive the impressions of relish; but the *papillæ* of the nerves are the immediate instruments of it, as likewise of the touch: there is, accordingly, a great analogy between these two senses. *Smelling* has for its organ the membrane which lines the inside of the nose; and it is by means of the ramifications of the nerves upon this membrane that we perceive those odorous vapours which float in the atmosphere. Animals which require a nicer and keener smell, are, therefore, endowed with a greater perfection of this organ. Worms appear entirely destitute of it, and perhaps, also, fish and insects; but it is possible, that, in the latter, the horns may be the organs of smell. By means of this sense, beasts find whatever is necessary for the preservation of their life; birds and reptiles discover their food; and many animals are apprised of the approach of their enemies.

Hearing conveys to animals the tremors and vibrations of the air. The construction of the ear is not the same in all beasts. Some, like the lizard, have two tympanums; some are deprived of several parts which

most other animals possess. It is supposed that neither birds nor fish have that part which is called the *meatus auditorius*, and that insects and worms are absolutely deaf.

The eyes are the organs of *sight*. Quadrupeds, fowls, fish, and amphibious animals, have all two eyes, one on each side of the head. Insects, on the contrary, have more than two. The spider and scorpion have eight; and the greater part of the others have them in profusion, generally collected into two orbits. In a fly, sixteen thousand eyes have been enumerated: in a beetle, six thousand three hundred and sixty-two; and in a butterfly, thirty-four thousand six hundred and fifty!! The number and position of these eyes compensate insects for their incapacity of turning or moving them. Fish have none of the aqueous humour, but their crystaline is nearly globular.

All the organs of sense are evidently disposed in such a manner as is conformable not only to the structure of animals, but also to their various necessities; as a few observations may suffice to demonstrate. As the eyes of most insects are immoveable, and, of course, useless on many occasions; nature, to supply this defect, has given them antennæ, by which they can discern whatever would be injurious to them, and what might escape their sight. The eyes of fish are disposed with equal wisdom: a full projecting eye would not suit them; for which reason their cornea is quite flat; but, to remedy this defect, the Creator has given them a crystaline perfectly spherical; whereas, in animals that live in the air, it is lenticular, and consequently flatter. Though the form of all eyes, in general, be round, yet even in this roundness we may discover great diversity; and their situation in the head is infinitely varied, according to the different designs and wants of animals. In man, who sees little but what is before him, the eye is placed in the fore part of the head, but so contrived that he can receive the impression of nearly the whole semicircle of objects before him. In birds, on the contrary, the eye is situated in such a manner, that it admits almost the whole sphere of surrounding objects; by which these animals are enabled to seek their nourishment, and to shun the dangers to which they are exposed. The *ear* of man has the form most analogous to his upright posi-

tion. In birds its posture is the best adapted for flight: it does not project, for this would be an obstacle to their progressive motion; but it is close and covered, in order to leave them a free passage through the air.

What wisdom! what economy! what admirable art, in the arrangement and the whole disposition of the senses of animals! But, perhaps, we only know the smallest part of this wonderful mechanism; and, undoubtedly, most of our observations in this respect deserve less the name of discoveries than of probable conjectures. If we could obtain a more perfect knowledge of the interior construction and use of the senses of animals, we should have still more reason to admire the wisdom of God. Let us, at least, employ the little we do know of them, in praising and glorifying our common Creator. The more imperfect our knowledge of animals is, the more we ought to abstain from looking upon them with indifference and contempt. Let us rather consider them as a mirror of the Divine power and wisdom: for animals themselves may afford us incontestable proofs that they, as well as mankind, are the workmanship of that adorable Being who is great in counsels, and infinite in wisdom.

MAY XIV.

Order in the Succession of Flowers.

Every plant appears on the earth in the order prescribed to it. The Creator has exactly fixed the time in which one is to unfold its leaves, another to blossom, and a third to wither and fade. Several weeks ago, we saw the snow-drop spring from the ground. A long time before the trees ventured to open their leaves, and when the earth was still covered with snow, it dared to peep out, and was the first of all the plants, and the only one which delighted the eye of the florist. Next appeared the crocus, though timidly, because it was too weak to bear impetuous winds. With it appeared the sweet violet and the auricula, so admired for its brilliant colours and the variety of its species. All these plants, and some others which appeared on the mountains, were the vanguard of the army of flowers; and their arrival, so agreeable in itself, had, besides, the merit of proclaiming the coming of a multitude of other flowers.

Now we see, in reality, the other children of nature appear, not all at once, but in a regular succession. Each month displays the ornaments peculiar to itself. The tulip begins to unfold its leaves and its blossoms. Soon the beautiful anemone will form its dome, and grow up round and full; the ranunculus will display all the magnificence of its leaves, and will charm our eyes with the most beautiful mixture of colours; and, to crown the lovely assemblage of flowers, the rose will open and bloom with all the beauties which distinguish it; and the carnation will show itself with that elegance which makes it so superior to its companions.

Let us pause here, and reflect on the wise and beneficent designs evident in this succession of flowers. If they were all to blow at the same time, there would sometimes be a great superfluity, and, at other times, a total want: we should scarcely have time to observe half their beauties, and we should be too soon deprived of them. But, now that each species has its appointed time and place, we may, in this pleasing succession, contemplate them more conveniently, and acquire a fuller knowledge of them. The beneficent and wise attention of Providence procures one more very great advantage: it not only presents to us each flower in all its beauty, but it makes up for the frailty of all those lovely productions of nature: for, though there are always some flowers fading, fresh ones are continually coming forward to adorn our gardens.

What goodness in the Creator, thus to favour mankind with a constant train of benefits! not only to multiply, but to render them constant and durable! He literally leads us through paths of flowers. Wherever we go, they spring up under our feet, that the sight and enjoyment of them may enliven and soften the pilgrimage through life. The same order in which plants and flowers succeed each other, is also seen in the human species. Each man appears in the world in the place allotted to him by the all-wise Being: each is born at the time chosen by God for his existence. From the beginning of the world, the generations of men have succeeded each other on this great theatre, in the order, time, and place allotted them by the Creator. In the moment that some are born, others are returning to dust: whilst one is preparing to be useful to the world,

another, who has already acted his part, is going off the stage. Who knows when his turn will come? Let us ever be prepared to resign our place with the tranquillity of a good conscience.

MAY XV.

The Zoophites.

The zoophites, or animal plants, are certainly insects; though, in their outward form, their immobility, and their manner of propagating by buds and seeds, they nearly resemble plants; like which they may also be propagated by grafts and slips. Their animal nature only shows itself by their sensibility and voluntary motion. Most of the zoophites hold by a sort of root to the sea, or the waters they live in: some inhabit stony and chalky places; others are enclosed in a case like horn; while some are entirely soft and fleshy. They have all this in common, that, without any preceding connexion, new zoophites spring out of the surface of their bodies. Whilst these young animals are fastened to the stalk, they form together one single animal: they are nourished by it, and nourish by turns: but as soon as they are loosened from the stalk, they have their separate existence. The zoophites also multiply in another way, similar to the generation of plants; they form a sort of bud, which contains a young zoophite, that grows some time with the stalk, but at last falls off, and becomes a complete animal.

Could we ever have supposed that there were animals whose form was so like plants, and to spring up like them? From the ideas we have always had of the nature of animals, could we ever have suspected, that, in an animal, the brain, the heart, the stomach, and all the intestines necessary to life, should re-produce themselves? Could we have conjectured the existence of an animal, which has neither brain, heart, veins, nor arteries; which, from the mouth to the opposite extremity of its body, is but a hollow bag; which appears to be all stomach, all intestine; and whose very arms and legs are stomachs and intestines? Could we ever have thought of an animal that could be engrafted like a plum-tree, turned inside out like a glove, and produce its young as a stalk shoots its branches? Formerly,

the person who would have hazarded such ideas would have been deemed a madman; and yet it is now incontestable that there are such animals, which resemble plants, not only in their external form, but also in their manner of perpetuating themselves. By this discovery, made in the commencement of the last century, natural history has gained a great deal. It may even be said, that it has enlarged our ideas of the power of God.—Since the discovery of animal plants, we have a new proof that the Almighty has distinguished his works by very small degrees, and that it is almost impossible to determine exactly where the animal kingdom terminates, and where the vegetable begins. It is generally believed, that the difference between plants and animals consists in the former having neither sensibility nor motion, and the latter having both. This, then, is the distinguishing characteristic between plants and animals: but how faint the shade, how light and almost imperceptible the line which separates the two kingdoms, when we think of the discovery of the zoophites! The several species of creatures rise, grow to perfection, and approach one another so nearly, that the limits which separate them can no longer be distinguished. Throughout all nature we see something of infinity, as the peculiar character of its great Author.

Eternal Being! who can conceive the immense extent of thy dominions? who can even comprehend the whole of any single part of it? What wonderful things will be discovered in future ages, that are now concealed from us! But what is already visible, sufficiently convinces us of thy infinite greatness.

May it, henceforth, be my employment to study the wonders of thy righteous government, and upon all occasions to glorify thy great and holy name. And, O that I may eventually arrive at that blissful place, where I shall see thee as thou art, and clearly understand the nature and extent of thy matchless wisdom!

MAY XVI.

The Pleasure of Agriculture and Gardening.

The cultivation of fields and gardens is one of the most agreeable occupations, and perhaps the only one of which it may be said, that the trouble it occasions is

compensated by a thousand pleasures. The generality of laborious employments oblige men to confine themselves in their rooms or their workshops; but he who devotes himself to agricultural pursuits always breathes a pure air, and enjoys the magnificent spectacles presented on the theatre of nature. The azure sky is his canopy, and the earth, enamelled with flowers, is his carpet. The air he breathes is not corrupted by the poisonous exhalations of cities. A thousand agreeable objects pass before his eyes; and, if he have any taste for the beauties of nature, he can never want pure and real pleasures. When Aurora opens anew the brilliant scene of the creation, he hastens to go out and enjoy it, in his fields, or in his garden. The orient clouds, tinged with gold and purple, announce the near approach of the sun. The verdant grass erects itself, as if to welcome the coming luminary, whilst the dew-drops on its points outvie the lustre of diamonds, emeralds, and sapphires. The herbs and flowers exhale delicious odours; and the air resounds with the songs of birds, expressive of their mutual loves and their universal joy. These concerts, indeed, may be considered as hymns of praise to the Creator, whose blessings they experience in the agreeable light and heat of the sun, the relish of their food, the sweet instincts of nature, and their cheerful vivacity. Is it possible, that at the appearance of so many pleasing and affecting objects, the heart should not be touched with delight, with love and gratitude towards God? Can the mind have a more pleasing employment than that of contemplating and praising his sublime perfections, the greatness of his designs, and the beauty of his works?

What contributes still further to render agriculture and gardening peculiarly pleasing, is, that an infinite variety of objects and occupations attach us to the work, and prevent that disgust which is the constant attendant upon sameness. There is a great diversity of shrubs, fruits, herbs, and trees, which present themselves to us under a thousand different forms. Nature leads the husbandman through various paths, and presents him with a thousand agreeable changes: sometimes he sees one kind of plants springing out of the earth; others rising high, and unfolding themselves; others, again, in full bloom. Wherever he turns his eyes he discovers

new objects. The heavens above, and the earth beneath, afford him an inexhaustible fund of pleasure and delight.

What agreeable hours may we pass, if, in this beautiful season, we visit the fields and gardens, in order to taste those pure pleasures with which such objects are calculated to inspire the heart! Let us therefore, when convenience will permit, abandon the smoky atmosphere of the city, and contemplate the grandeur of God in the works of nature; and at these times, let us give ourselves up unreservedly to the sweet sentiments of gratitude and joy.

Bless, bless the Lord! praise his works, and trace him in every field, and through every operation of active nature. It is he who ordains the return of spring, and tells the harvest when to fill with corn the granaries of the righteous and unrighteous man. O! think of him when, in spring, the soft breath of the zephyr, emblematic of his goodness, refreshes you in the air; and, in autumn, when the branches of the trees bend down under the weight of his bounteous gifts. He crowns the year with his blessings; he is the source of all felicity. He waters the parched plains, and fertilizes the barren earth. The towering forests, the flowery valleys, and the meandering rivers, exhibit traces of his goodness. In a word, we may, in all situations, and in every object, meet with the adorable Lord of the universe.

MAY XVII.

The Tulip.

Of all flowers, the tulip has certainly the finest form. There is no silk-mercer, who, in the variety and beauty of colours, or the mixture of light and shade in his silks, can rival the perfection of this flower. The height of the tulip, its form, its tints, its masterly execution, make it the queen of flowers. And if we consider the millions that annually blow, all differing in brilliance and proportion, our admiration is irresistibly excited. To be convinced of the existence of a wise and good God, let us only contemplate one of these charming flowers, and we shall acknowledge, that such a master-piece of nature could never have been pro-

duced by blind chance, without the intervention of an intelligent Cause.

It is true, that, at present, tulips are produced and perpetuated by roots; but whence came the first construction of this machinery, and that first arrangement of which all the following revolutions are only the consequences? Must we not necessarily admit an intelligent Cause, which we call the Creator of the world? It requires as much wisdom and power to create one tulip, from which ten others proceed, as to create ten at once; for the new comers must have existed in their forerunners; and it is evident that their form and number must have been previously determined. When we look at a bed of tulips, therefore, let us not limit ourselves to the admiration of their beauty, but let us admire, above all things, the infinite wisdom of God, who traced the drawing of these flowers, and executed them in such perfection.

The charms of the tulip, however interesting, lose some of their value when we consider that they merely please the sight, without gratifying the smell; and this is particularly the case when compared with the carnation, which, to the beauty of its form, adds the most exquisite perfume. Such is the fate of persons who are endowed with beauty, and set off their charms with every external ornament, but have neither a sound understanding nor an amiable heart. It is much more desirable to have fewer outward beauties, with a good disposition: the former captivate but for a very short time, while the beauty of the mind remains, when all the charms of form are fled; and the esteem which our virtues inspire, is constant and durable. A virtuous soul is pleasing both to God and man. It is formed by the rules of wisdom, and is decorated with the robe of innocence. The perfume of good works is spread around, wherever it exists, and it will hereafter be transplanted into the garden of Paradise.

One observation, which the history of plants affords us, is, that the more beautiful a flower is, the sooner it fades. In a very short time, nothing of this blooming tulip will remain but a dry and withered stalk. Its life and beauty last but for a few weeks; age destroys its charms; its leaves fall off; its colours fade; and the tulip which so lately resembled a beautiful virgin, is

now a deformed skeleton! What a useful lesson is this for us! How little can we depend on exterior charms! How uncertain and frail is beauty! How near is the approach of death! For what is our life, but the life of a flower? Those who resemble it in beauty, resemble it likewise in the shortness of their days; for, "Man that is born of a woman, is of few days, and full of trouble. He cometh forth like a flower, and is cut down *."

When the period of our dissolution arrives, may our lives be closed as honourably as that of the tulip. It has been the ornament of the garden, and the delight of the florist. Its death therefore is the more to be regretted, because its life was pleasing and useful. May these reflections induce us to live in such a manner, that when death approaches to cut us down, pious persons may bedew our graves with their tears, and say to each other, Alas! why was not so excellent a life longer continued?

MAY XVIII.

Reflections on Grass.

However beautiful the flowers may be which are cultivated by the care and industry of man, we should know but little of the wonders of the vegetable kingdom, were we to limit our researches to the contemplation of a flower garden. Each field is a scene of the wonderful works of God, and has the same claim to our observation as the most elegant *parterre*. Can any thing be more astonishing than the prodigious quantity of grass in a field? Suppose a meadow to be a thousand yards in length, and as many in breadth; its surface would then be a million of square yards. And if, in stepping, we cover ten tufts of grass, then a square yard contains a hundred of these tufts. Whence it follows that in casting our eyes over the meadow, we see, at once, a *hundred millions* of these curiously-formed machines: and allowing that each tuft has a hundred tubes, by which it imbibes nutriment from the earth, this gives *ten thousand millions* of regular tubes. But this calculation is evidently below the truth. What an immense

* Job, xiv. 1, 2.

multitude, then, must be found in the whole meadow! and how small in comparison is the number of plants and flowers which are cultivated in gardens! Why has the Creator so prodigiously multiplied the productions of the vegetable kingdom? Why, from each sort of grass, does he cause to spring such a numerous multitude? It is, undoubtedly, that beasts, as well as men, may find sustenance. The fields are, properly speaking, the magazines for animals.

Another circumstance worthy of observation, in respect to grass, is, that it neither requires sowing nor tillage, but grows and perpetuates itself independent of our care. How sad and barren would our pastures and meadows be, if we were loaded with the care of sowing the grass-seed, and of afterwards watering what our hands had sown and planted! But, at the creation of the world, God provided, that there should never be a deficiency of grass. From that almighty word of the Creator—"Let the earth bring forth grass, the herb yielding seed," proceeds the constant and uninterrupted fertility of our fields.

To reflect on the colour chosen for the grass, is sufficient to make us sensible of the wise and beneficent care of the Creator. If all those fields were red or white, who could for any length of time sustain their dazzling splendor? If the predominant colour were darker and more gloomy, how melancholy would the face of all nature appear. But green is between both colours; it agrees with our eyes, and, far from offending or tiring, it pleases and refreshes them. It is also very remarkable, that, in this single colour, there is such a variety of shades, that there is not a plant, the green of which is exactly as pale or as deep as that of another. It is evident that, in the arrangement of the vegetable kingdom, God has not provided less for our pleasure than for our convenience. This double attention is well calculated to convince us of that supreme goodness and wisdom which extends over the whole earth. May the proofs of it, which daily present themselves before our eyes, never leave us cold or indifferent to it: on the contrary, let us employ that reason which we owe to God, in making ourselves, through all his works, acquainted with that infinitely wise and merciful Being.

Whenever we walk in the fields, let us indulge those meditations which the sight of the grass should naturally inspire. Infinite God! with what wisdom hast thou formed these plants! How mercifully hast thou provided for the sustenance of man and beast! With what bounty dost thou dispense the beams of the sun, and the fertilizing showers, for the increase of vegetables, which strengthen our bodies; milk, which affords so sweet and healthy a nourishment; and the flesh of animals, which is given in such profusion. For all these, and a variety of other advantages, which thou grantest through means of the fields, we desire to bless and praise thy holy name continually.

MAY XIX.

Sentiments excited by the Contemplation of the Sky.

Who but a Spirit of unlimited knowledge and power could have formed that superb vault over our heads? Who could have given to those immense globes that perpetual motion, whose velocity is inexpressible—a motion which even the smallest grain of sand could not have of itself. Who commanded these enormous masses of heavy and inactive matter to assume so many different forms? Whence proceeded that connexion, that beauty and harmony, which shine through every part of the whole? Who regulated all things so exactly, according to number, weight, and measure? Who prescribed to those immense bodies such laws as none could discover, but minds endowed with the greatest wisdom? Who measured those vast circles in which the stars move without the smallest deviation? Who put them into the course they run, and which they are to run without interruption? All these questions lead us to thee, thou adorable Creator! Self-existing, independent, and eternal Being! it is to thee the celestial bodies owe their existence, their laws, their arrangement, their power, and all the advantages they procure to the earth.

What sublime ideas arise in our souls, when we contemplate these magnificent objects! If the space in which so many millions of worlds revolve, cannot be measured by our understanding; if the globes, which run their prodigious courses there, are of a size to a-

stonish us; if the fabric of the universe, constructed by the Creator, is of such immensity that our ideas are lost in it; what must *thy* greatness be, O God! and what understanding is able to conceive it! If the heavens and all their host have so much magnificence, beauty, and majesty, that the eye can never be satisfied with contemplating, nor the mind with admiring them, what must be thy beauty, thou eternal Being, of whose splendor and glory these creatures are but faint and imperfect images! What must be the incomprehensible extent of thy knowledge and understanding, since thou seest at one glance the whole immense space, with all the innumerable bodies it contains, and art so intimately acquainted with the nature and properties of all the beings thou hast placed there! What depths of wisdom and knowledge must be found in thee, O Lord! who hast formed such admirable plans! How great must thy power be, to be able to guide and direct, according to thy will, the most immense bodies! to animate all by thy breath! and to preserve all by the word of thy power!

But would the Almighty have exhibited such demonstrations of his glory, without having some end in view? Shall the celestial bodies announce his boundless wisdom, infinite skill, and eternal power, without effect? Shall they, in vain, dispense a rich abundance of Divine favours? Are not all these things done that intelligent creatures may attend to them, reflect upon them, and make them the subject of frequent meditation? How stupidly indifferent must that person be, who admires the master-piece of some eminent artist, but neglects the art and infinite wisdom displayed in the works of the Creator! If those who execute great and beautiful works are entitled to our admiration, with what profound humility should we prostrate ourselves before that God who has constructed the magnificent edifice of the universe! The heavens proclaim his magnificence; and all the celestial bodies obey the laws which he has prescribed. And shall *man* alone refuse to obey the King of the universe, or rebel againt his wise and salutary laws? The influences of his bounty descend upon us from every quarter, and bring us unnumbered blessings, pleasures, and conveniences. How ardently should we love, how gratefully adore him for

all his benefits! O! what abundant cause have we, individually, to exclaim with David, "I will sing unto the Lord while I live; I will sing praises unto my God while I have any being: my meditation of him shall be sweet, and I will rejoice in the Lord!"

MAY XX.

The Fertility of Plants.

The magnificence of the terrestrial part of the creation shines in nothing more conspicuously than in the astonishing fertility of plants. A single one can produce thousands, even millions, of others. One tobacco-plant may yield forty thousand three hundred and twenty grains of seed: and, if we calculate, in proportion, the produce of four years, we shall find that from a single grain there may spring two trillions six hundred and forty-two thousand nine hundred and eight billions, two hundred and ninety-three thousand three hundred and sixty-five millions, seven hundred and sixty thousand grains of seed? An elm, twelve years old, has often produced a hundred thousand grains of seed: what a prodigious number might spring from these in a few years! Suppose the tree have but a hundred thousand buds, and that the shoot of each year contains only five, there will be then every year five hundred thousand plants, which may be considered as new. If to this we add what is produced by the extension of the root, by ingrafting, &c. we shall only be surprised that the earth has not yet been exhausted by plants.

But we must also remember the numerous multitude of animals which derive their food from the vegetable kingdom. They annually consume so great a quantity of plants, that, if nature had not endowed vegetables with very extraordinary prolific qualities, there would be reason to fear their total destruction. But it is peculiarly worthy of remark that the very animals which consume, often propagate them. Birds eat fruits, but they void the kernels just as they swallowed them, without hurting them in the least. While they are pecking certain sorts of fruit, they scatter the seed about, and often to a great distance. This dispersion is necessary, in order that one species of plant should not fill a whole field. With the same design some seeds have little fea-

thers or wings, to be dispersed by the wind. It is also certain that, in general, the plants are more fruitful than animals. This may be proved by comparing trees with four-footed animals: the former produce, annually, sometimes for several ages, a great number of new trees; whereas the greatest quadrupeds, such as the elephant, the mare, &c. have but one, or at most two young ones, and are often barren. Smaller quadrupeds, as the dog, the cat, the rat, &c. are much more prolific, but their fecundity bears no proportion to that of trees. Fish and insects approach nearer to it: tench lay about ten thousand eggs, carp twenty thousand, and cod a million. If, however, we compare this fruitfulness to the wild rose, mustard, or fern, it will be found that these plants, and many others, multiply much more than either fish or insects; particularly if it be observed, that almost all plants multiply in several ways; whereas, most animals have but one method of propagating. A tree may produce as many new trees as it has branches, boughs, and even leaves.

With what wisdom, therefore, has God proportioned the animal and vegetable kingdoms! If the multiplication of vegetables were less considerable, a great number of animals would die of hunger; our fields, meadows, and gardens would be deserts, with only a few plants scattered here and there. On the other hand, if the Creator had ordained that the granivorous animals should increase more than the plants, the vegetable kingdom would soon be at an end; but, according to the relation between the two kingdoms, the inhabitants of both multiply in proportion, so that no species is destroyed.

Thus, O man, abundance and pleasure surround thee on every side: for it is for *thee* that the Creator has made the vegetables so astonishingly fruitful: it is for thy support, thy pleasure, and thy health, that he has produced such variety of plants, and in such great abundance. Count, if thou art able, those which cover a single field; their number is inconceivable; and this innumerable multitude is an image of the immensity and omnipotence of the Lord; who, throughout all nature, "openeth his hand, and filleth all things living with plenteousness."

MAY XXI.

Description of the Beauties of Spring.

NOTHING is more worthy of admiration than the revolutions which spring occasions upon our globe. In autumn, every valley, field, and forest, present us with images of death; and in winter, nature is deprived of all her ornaments. The animals are melancholy; the inhabitants of the forest conceal themselves, and are silent; the earth becomes a vast solitude, a desert, a grave: and nature appears to have fallen into a state of inaction and insensibility. She, however, labours silently for us, whilst we are ignorant of that secret influence, that divine power, which is making preparations for the renewal of nature. All the objects which lately appeared dead, are now reanimated. In the trees alone, what a number of changes take place! First, the sap which, in winter, had entirely forsaken the trunk and branches, rises slowly up its invisible channels, and particularly in the bark, through ways which can neither be guessed at, nor discovered. This sap serves to swell the buds: and what treasures of divine power are contained in these little recesses! The leaves, with their cheerful green; the branches which are to shoot through between the unfolded leaves; new buds upon these branches, full of leaves, though still invisible! then, that multitude of blossoms, with the sweet exhalations which embalm the air; in those blossoms fruit, and, in the fruit, the seed of an infinite number of other trees!

The cheerful splendor of the sun transports and animates the soul; and the activity of nature, in the plants around us, charms the sight. There is not a field which does not present a beautiful landscape to the eye, and flowers to the smell. Almost every bird sings its hymn with more or less melody. How cheerful the song of the linnet, hopping from branch to branch! It throws out its voice as if it had formed the design of particularly drawing the attention of man to delight him. The sprightly lark rises in the air, and seems to salute the day with its pleasing notes. The cattle, by their cries, express the spirit and joy with which they are animated. In the rivers we see the fish (which, during winter, had

fallen, frozen and motionlesss, to the bottom of the water) now rising near the surface. They have recovered their former vivacity; and their pliant, gentle, pleasing motions, amuse our sight.

How is it that we can so often behold these objects, without feeling the most profound and respectful admiration of that eternal Being, whose power so gloriously manifests itself! Never should we breathe the pure and refreshing air of spring, without suitable and useful reflections.

Let us never contemplate the foliage of a tree, the golden treasures of a corn field, the beauteous enamel of a meadow, or the sublimity of a forest;—let us never pluck a flower, nor walk in a garden, without remembering that God shelters us with the delightful umbrage of the trees; that HE clothes the fields and woods with their beautiful verdure; and that HE alone gives to the flowers the richness of their tints, and the fragrance of their perfumes. Let us recollect that all these things result from the goodness of that God who has rendered us abundantly more happy than thousands of our fellow-creatures, and at whose command the cheerful spring revives the face of the earth.

Above all things, let us adore our Creator for the inestimable gift of his grace. Spring itself would comparatively be destitute of charms, and would be much less calculated to inspire us with delight, were we deprived of those sublime joys which his grace sheds abroad in the heart. Merciful God! reveal thy love to our souls more and more, and vouchsafe to cherish in our breasts the blessed hope of one day enjoying the gifts of thy bounty in another and a better world!

MAY XXII.

The Language of Animals.

MAN, properly speaking, is the only animal that can be said to have language; and it is particularly by this circumstance that he shows his superiority over all other animated beings. It is by means of speech that he extends his empire over all nature; that he rises towards his divine Author, contemplates, adores, and obeys him. It is by this that he learns to know himself, and the creatures around him; and to make them subservient

to his use. All animals except man are deprived of that faculty, because they are void of reason; and it is reason which capacitates us to learn languages, and the use of speech: but, as animals make their wants and feelings known by natural signs, as they utter certain sounds expressive of the sentiments which affect them, one may so far allow they have a sort of language. The variety of those tones, their number, their use, and the order in which they follow one another, form the essential part of animal language.

To form a just idea of this, it is not necessary to have recourse to deep researches; it may suffice to observe the animals daily before our eyes, and with which we have a sort of intimate connexion. Contemplate the hen with her chickens: if she find any food, she calls and invites them to it: they understand her, and come instantly. If they have lost sight of this tender mother, their plaintive cries express their distress, and their desire to rejoin her. Attend to the different cries of the cock, when a stranger or dog comes into the poultry-yard, when a kite or any other enemy appears, and when he calls or answers the hens. What do those lamentable cries of the turkey mean? See her chickens suddenly concealing themselves, and lying so quiet that one might suppose they were dead. The mother looks up to the sky, and her anxiety increases. But what is it she sees there? a black speck, which we can scarcely distinguish: and this speck is a bird of prey, which could not escape the vigilant and piercing eyes of the mother. The bird of prey disappears, and the hen utters a scream of joy: her anxiety is at an end: the chickens revive, and gather joyfully about their mother. The language of the dog is equally copious and expressive. Who can be insensible to the joy that this faithful servant expresses at the return of his master? He jumps, dances, runs here and there; turns quick and lightly round his master; stops all at once; fixes his eyes upon him with the greatest tenderness; approaches, licks, and caresses him several times: then, beginning his play again, he disappears, and returns; puts himself in all sorts of pretty attitudes; barks; tells every body how happy he is: and shows his joy by a thousand sportive gestures. But how different are these sounds from the noises he makes at the approach of a

robber, or those he utters on seeing a wolf! If we follow a dog in the chase, we may observe how he makes himself understood by his motions, and how exactly his signs correspond with the discoveries he wishes to impart.

This affords us an opportunity of admiring the wisdom and goodness of the Supreme Being. What beneficent attention has he shown towards animals, in granting them the power to express by sounds their wants and feelings! From their nature and organization, it was impossible they should speak the human language: but they would have been much more to be pitied, and less useful to us, if the Creator had entirely deprived them of the power of making themselves understood. To compensate them for the want of speech, he has endowed them with address to communicate, by a thousand little ways, their feelings to each other, as well as to mankind. He has given them organs proper to produce and vary a certain number of sounds, by which each species makes itself understood. Hence it is, that, when we blow into the windpipe of a dead sheep or cock, we imagine we hear the animal itself. In a word, the Creator has given as much force to the language of animals, as their nature can admit of, and all that the end for which they were created required.

How perfect does man appear in regard to speech! The language of animals consists in a number of inarticulate and imperfect sounds. They have no ideas but those prompted by their senses, because they are incapable of learning a methodical language. They only know objects by some qualities evident to the senses, to which all their judgments and comparisons are limited. As for us, we possess faculties in all respects much superior. We can rise to general notions, and separate the object from the qualities which distinguish it. We can, by means of an infinity of articulate and arbitrary sounds, express all our conceptions. We can understand the connexion which unites us to other beings, act in consequence, and thus ensure our felicity.

Merciful Creator! let us never forget this important part of thy benefits. Whenever we speak may it be to show forth the excellence of thy wisdom, to adore the wonders of thy goodness, and to express our gratitude for the privileges thou hast conferred upon us!

MAY XXIII.

The Magnitude and Number of Creatures on the Earth.

How great and numerous are the works of the Lord! We must acknowledge this if we only know those which the earth contains; for how great is the extent of this globe, the abode of so many different nations! They occupy vast domains; and yet how many solitudes and deserts are there, which have never been inhabited by man! Neither does the land, taken altogether, fill near so great a space as that prodigious assemblage of waters called the sea. But if the earth itself be a proof of the greatness of the Almighty's works, we cannot cast our eyes on the creatures it contains, without admiring the number and variety of them.

In the first place, we find innumerable sorts of stones, minerals, and metals, concealed in the earth: then, what astonishing variety amongst the trees, plants, fruits, and simples which cover its surface! Notwithstanding all the pains that have been taken to observe and classify their different species, the work is still far from being completed.

Let us next consider the diversity observable in living creatures. How great the disproportion between the eagle and the gnat, the whale and the gudgeon, the elephant and the mouse? and yet the whole space between them is filled with living creatures. The various species of animals come so near to each other, that it is sometimes difficult to distinguish one from the other; yet these species are so multiplied, that from the gnat to the elephant they form a sort of chain, in which each link is connected with the preceding one. In seas, lakes, and rivers, on the surface and in the bosom of the earth, there is no place which, some way or other, does not contain a living creature. Yet, however great the number may appear of these creatures visible to the naked eye, they are as nothing in comparison of those which are too small to be seen without a glass. By the help of the microscope, almost incredible discoveries have been made, of which, however, all who have an opportunity may be convinced with their own eyes. By these means, a new world presents itself, which was before utterly unknown, and such living creatures are

seen, that imagination itself can scarcely form any thing so extremely small, since one of them is not near so large as the millionth part of a grain of sand. And it is not only their number and variety, but also the beauty and delicacy of their form which ought to strike us with astonishment. What appears dull to the naked eye, or even what escapes it entirely, has an inconceivable lustre and delicacy, when seen through the microscope. Gildings, which art cannot imitate, shine in the smallest grain of sand, but particularly in certain parts of insects; for example, on the head and in the eyes of a little fly: and, in the construction of the lowest of animated beings, an exact symmetry and admirable order are observable. In a word, we find that millions of creatures, so small that the eye can scarcely distinguish them without the help of a glass, have, notwithstanding, as perfect an organization in their kind, and are as proper to fill the several purposes of the Creator, as the greatest animals with which the earth is peopled. Such considerations are calculated to give us a lively sense of our own littleness. We are lost in this innumerable multitude of God's creatures, which would suffice to attest his grandeur, though ourselves and millions of our fellow-creatures had never existed. In every element there are beings created and preserved: each grain of sand is a dwelling for insects, which are also in the class of God's creatures, and are links of the immeasurable chain. Here our ideas are lost in infinity. The more we reflect on the greatness and variety of his works, the more we feel the limits of our understanding. We have only to admire and adore!

MAY XXIV.

Spring is an Emblem of the Frailty of Human Life, and an Image of Death.

At this season we need not go far to seek emblems of frailty and mortality: they present themselves on all sides, being connected with almost every beauty of nature. Undoubtedly the Creator's design, in this respect, was to remind us of the uncertainty of the things of this world, and to repress the dangerous propensity we have to place our affections on objects so vain as all those in nature. Spring is the season in which the plants receive

a new life, and, at the same time. that in which most of them perish. Serene as the days may appear, they are suddenly obscured by clouds, rain, and tempest. Sometimes the morn breaks forth in all the lustre of its charms; but before mid-day, its splendor, which had flattered us with the hope of fine weather, disappears. Sometimes, also, this hope is fulfilled, and the days of spring prove delightful. But how transient are their beauties, how swiftly they pass away! they vanish, even before we have had time to enjoy them. It is thus, that the best of our life (which is so often compared to the spring of nature) flies away. Often, in the morning, every thing smiles upon us, every thing promises joy and happiness; but before evening, or perhaps before noon, our hearts are oppressed by trouble, and drops of sorrow fall from our eyes. Let us take a retrospect of those years which may be said to constitute the spring of life. O! how short-lived were the pleasures of our youth! Nothing could have been more diversified than the pleasures we then enjoyed: but where are now those happy moments, those ecstatic delights? what is become of our uninterrupted vivacity, and the roseate hue which adorned our cheeks? We no longer have a taste for those turbulent pleasures which then intoxicated us. What now remains of those fine days that are past?—nothing but a melancholy remembrance, unless we have made good use of them. How forcibly does the spring point out to us the frailty and end of life! Behold how far its charms extend! behold the trees full of blossoms! But let us not exult too much in their rich ornaments; shortly they will return to that dust whence they came. All that showy generation must die in the same spring which gave them birth. It is thus that our lives vanish. Their longest duration is but a day in spring. An unforeseen death hurries us to our graves, whilst the health and strength we enjoyed promised us a long course of years. Sickness and death often come upon us so much the more unexpectedly, as their approach is concealed under an appearance of youth and health. Let every one behold an image of himself in the spring blossoms, and there read his own uncertain state: how transient is their bloom! What a picture! how instructive!

Though these thoughts ought to render us serious, yet we should deeply enjoy both the spring of nature,

and the pleasures of life, as they are bestowed upon us by the Creator; but, at the same time, let us mix reflections with these enjoyments which arise from the nature of spring and life. The thought of death is very consistent with every innocent pleasure. Far from infusing melancholy into our hearts, it should teach us to rejoice evermore in the Lord; it should guard us against making a bad use of earthly pleasures; it should inspire us with a desire of solid and uninterrupted happiness. The beauties of the visible world give us an idea what must be the infinite beauty of the invisible and heavenly world; and, finally, when the time comes, in which our lives must fade away as the grass of the field, then may each of us say, with Christian fortitude, Though my life, like a spring flower, wither and turn to dust; though these cheeks, wherein the roses of youth shine, be a prey to corruption, I will still hope for a better life, which I shall never loose; and the body in which I shall then be clothed, will never decay.

MAY XXV.

Spring is an Emblem of the Resurrection of the Body.

Most of the flowers which now adorn the earth, and excite our admiration, were once but coarse and shapeless roots. This presents us with a most interesting emblem of the resurrection of the righteous, and the state of their re-animated bodies. As the roots of the finest flowers, while buried in the earth, are destitute of form and beauty, but, when in bloom, exhibit a thousand charms; so the human body, which, while in the grave, is an object of horror, will experience a most astonishing change in the morning of the resurrection. "For what is sown in corruption is raised in incorruption; what is sown in dishonour is raised in glory."

As soon as spring takes place of winter, life and joy succeed those melancholy impressions which a severe season makes on the mind of man, and the first fine day makes us forget the gloom of a tedious winter. Thus shall we forget, at the great day of the resurrection, all the sad and melancholy days of our past life. In this world the clouds of affliction cast a gloom upon our countenance; but when the new creation shall dawn upon us, grief shall be completely annihilated: nothing

shall disturb our serenity; but our souls shall be filled with permanent and celestial joy.

The earth seems to experience a general renovation in spring. Dull and uninteresting as it appeared during the winter, so pleasing and delightful is its aspect now. We are charmed and gratified by each surrounding object, and can scarcely help imagining, each spring, that we are removed into a more cheerful habitation. It is thus that, at the day of the resurrection, we shall find ourselves transported into a new and magnificent dwelling. The new heaven and the new earth will be free from all the apparent or real defects of the globe which we now inhabit. Peace, order, beauty, and righteousness, will render our future abode the happiest that is possible to be conceived.

When the warm rays of the sun have penetrated the earth, millions of plants and flowers spring out of its bosom. So will it be in the great day, when successive generations shall arise from the dust in which they have been buried. As the flowers of spring rise from their seed to attract our notice, and delight our senses, so the bodies of the righteous which have been deposited in the grave, shall one day arise, clothed with celestial beauty. Spring is the era of vegetation for grass, flowers, and every species of plants: it is then that every thing which has sprung up out of the earth unfolds itself more and more every day, and visibly increases in strength and beauty. And the day of resurrection will be, to the immortal soul of the Christian, the epoch of that unlimited progress which he shall make in all good: no weakness will then detain him, no obstacle impede his progress in the path of perfection; but he will proceed from virtue to virtue, and from felicity to felicity.

In spring all nature seems to rise out of sleep, to praise its Divine Author, and all the inhabitants of the air unite in a universal hymn to glorify the Being who has formed them. So, in the morning of the resurrection, similar songs shall be chanted by the elect of God. Comparing the greater with the less, we are naturally led to exclaim, "If such be the charms and enjoyments of the earthly spring, what must be those of the new creation!"

MAY XXVI.

The Attractive Power of Bodies.

We often see two bodies approach each other, without being impelled by any external force. The cause which produces this effect is called *attraction*, which seems to be one of the principal springs of nature. It is by means of this law, that fluids ascend in capillary tubes, and it is partly the cause of the circulation of the juices in plants, and even in animals. It is true, that the power of expansion in the air contributes its share to it, at least in plants; as a portion of air is found in the fluid which nourishes them. Vegetables are also provided with veins which imbibe the outward air, and at the same time help to draw up the juices: however, attraction is certainly the principal cause of this phenomenon. It is well known that the human body is a series of capillary vessels, in which the humours are continually in motion; and this motion is partly regulated by the laws of attraction. A great number of the phenomena we observe in the corporeal world have this attractive power as a principle; and it is by this, that the motion of the celestial bodies can be most satisfactorily explained. These enormous globes, separated from each other by immense intervals, must be united by some secret connexion, to form such a perfect whole as the solar system; and it is probable that the union of the celestial bodies, their direction, the law which prevents their deviating from their prescribed course, with the motion of the planets and comets round the sun, all depend on the attractive powers of that luminary, and on the gravitation of the bodies which incline towards it. How admirable is that wisdom, which, by means of the same law, produces the vegetation of a blade of grass, and the motion of the whole system of the universe!

These reflections should lead us to adore the Supreme Wisdom. If it appear in the celestial bodies, it is no less visible in the government of rational creatures. The Creator acts, in this respect, upon principles equally wise, according to the same laws, and accomplishing every thing with the most wonderful simplicity; but we are not always sensible of this, because we do not think any thing worthy our attention that is not strikingly

great. But why should we not acknowledge in things which appear to us of little importance, the traces of wisdom which are so evidently impressed upon them? When cities and countries are swallowed up by earthquakes, destroyed by fire, or overwhelmed by water; we become attentive, and acknowledge, in such revolutions, the work and the providence of the Ruler of the world. But are extraordinary events alone capable of reminding us of the wisdom and justice of God? Does not his greatness appear as conspicuously in the smallest blade of grass and in the meanest insect, as in the motion and harmony of the spheres? Yes, in the small, as well as in the great, God manifests the glory of his attributes. It is through inattention or negligence, that we do not every where see it, even in the smallest beings, and most trifling events. To be convinced of the wisdom and goodness which preside in the government of Providence, we have no occasion to go to remote objects; we need only dwell on what relates to ourselves, and to the particular dispensations of God in this respect. Our own lives, and the events with which they are marked, may teach us how wise the methods he has chosen to make us happy; how many little circumstances his providence has caused to concur towards the execution of his designs; and how numerous the means he makes use of to preserve us from evils, or to procure us blessings.

MAY XXVII.

Complaints of Mankind relative to certain Inconveniences in the Laws of Nature.

"WHY is the human body, from its constitution, liable to so many infirmities and accidents?" Whoever asks this question, let him first determine how it is possible to form a body which unites more advantages in itself than that which we have received from our Creator. It was incompatible with nature, and the chain of things of this world, that man should have an invulnerable body. If one of our fellow-creatures be deformed, another lame, a third deaf or dumb, is this a reason to murmur against God? are those defects so common as to give us reason to complain? If, after these questions, any one should still think he has any reason for discontent, let him reflect on the following truths.

It is of use to men in general to have some examples of the defects to which the human body is liable; for, when a person, perfect and well made, compares himself with one that is crooked and deformed, he is sensible of all the advantages of well-formed limbs, he learns to value properly a gift till then unthought of, and to take more care of its preservation. How valuable is each eye, each ear, each organ of sense, each joint, each limb, if we only observe the condition of the few people who are deprived of them! Would any of us part with a limb in exchange for the greatest treasure? Are not our bodies more beautiful and regular than the finest building, or the most curious machine? And though the latter are very inferior to them, we are far from attributing the assemblage of their parts to chance.

"Why are the countries of the earth so different from each other; sometimes cold, and sometimes damp, sometimes low, and sometimes high?" O man! if thou hadst the power to form a globe, wherein every thing should contribute to the advantage of men and animals, would thy understanding furnish thee with a plan more excellent than this? The countries of the earth, by reason of their diversity, produce a variety of exhalations and winds, which occasion that mixed air which, experience shows us, is best calculated for the health and comfort of men and animals, and for the propagation and growth of plants.

"It is, however, allowed, that the variations in weather are not beneficial to all men, or to all countries." But, has not the preceding weather influenced the following, as the climate of one country often influences another? Are we capable of judging of the whole?—Must a million of farmers sigh in vain for a shower, because dry weather would suit the private convenience of one family? A certain temperature of the air may occasion, here and there, a transient barrenness; but, can it be called an evil, if it be necessary in order to hinder the air from corrupting? Should an east wind (which is favorable to a whole country) cease to blow, because its violence may cause some shipwrecks, or be hurtful to some consumptive people? Is it reasonable, when we cannot take in the whole, to find fault with a part?

"But why are there so many noxious animals?"—

Does the objector think that no rapacious animals should exist upon the earth? Let him recollect that these very beasts of prey restrain the number of animals that might otherwise overpower us; and it is because many animals serve for food to beasts of prey, that the numbers of living creatures increase every year. If ravenous beasts did not exist, the carcases of animals, on which they feed, so far from being useful to living creatures, would be injurious. Animals thus devoured, are replaced by others; and, in most cases, population depends upon the quantity of sustenance. Hence gnats, and other insects, would soon want food, if the animals which prey on them did not prevent them from multiplying too fast.

"Why has the Creator regulated the course of nature by such invariable laws?" It is precisely by means of this regulation that man's experience and labour enable him to make use of his understanding and powers, so as to be, in some measure, master of his own welfare. Could we desire to inhabit a world where, when we were hungry, we had only to wish, and we should be satisfied? where our clothes should fall from the clouds, if, when travelling in a cold night, we neglected providing any? or where we might at pleasure walk sometimes on the ground, sometimes in the water, sometimes in the air?—a world where the stomach would never be overloaded with the weight of food? where an iron hatchet would swim, if, by accident, we let it fall in the water? where bodies, going out of their natural direction, should describe an oblique line, lest their fall should hurt any body? Could we wish to inhabit a world, where we should have no occasion to do any thing? where we could not in any way promote our own pleasures? where there should be no rule, no fundamental law? where, in fine, the best, the bad, the worst, being equally unknown, nothing could make us attend to the laws of nature.

There will ever be a number of things in nature, the purposes of which, and their relation to the whole, must ever be concealed from us. We shall always find some, which, to our limited understandings, will appear contradictory and ill-adapted to the plan of the Deity. But, on all occasions, let us rest on this principle, that God does every thing for wise and beneficent purposes.

And when these enigmas, these inexplicable things, present themselves, let us say, with the apostle, "Oh! the depth of the riches, both of the wisdom and knowledge of God! how unsearchable are his judgments and his ways past finding out! Who hath known the mind of the Lord, and who hath been his counsellor? For of him, and through him, and to him, are all things: to whom be glory for ever, Amen *."

MAY XXVIII.

Sins we are apt to commit in Spring.

Is it possible that we can profane, by sin, a season which is peculiarly calculated to animate us to the practice of piety? Would it not be natural to suppose, that, in these days of spring, each field would be to us a temple, where we might offer up to our Creator the pleasing sacrifice of praise and thanksgiving; where each thought, each sentiment, and action, would tend to his glory? But, alas! we daily witness the ingratitude of men towards their heavenly Benefactor; they see nature renewed; they behold the flowers and a thousand other delightful objects, without thinking of him who made all these things, or, at least, without returning him thanks for the wonders of his goodness. This vice of ingratitude particularly prevails at this season; and is often the fruitful source of many others. Man is the only creature on earth insensible to his own happiness; and yet he has the faculty of feeling it to its utmost extent. This is addressed to the ungrateful and insensible heart. But what attention can be expected from those who pay so little to God, who speaks throughout all nature with a voice so intelligible and energetic! Yet how is it *possible* to forget the Creator? All his works proclaim him; and we can neither know ourselves, nor the world we live in, without knowing him. Every creature reminds us of its Maker; each part of the vast scene of nature is filled with the Deity. He shows himself in each blade of grass—each flower and every bud. He constantly borrows the mild and persuasive language of nature, and addresses himself to our senses, our reason, our conscience, and all our faculties. Let us only listen

* Romans, xi. 33, 34, 36.

to this language, and we shall no longer remain insensible or ungrateful.

How ought we to employ these fine days of spring? Let us visit our fields and gardens, that we may inhale the salubrious air, and contemplate the beauties of nature; but let us beware of abusing them by giving way to extravagant pleasures, which lead to folly and repentance. We shall not truly enjoy this charming season till, by fixing our attention on the works of our Creator, we discover his divine goodness and power; then will our hearts experience joys infinitely superior to the pleasures of those who forget their Maker. It is for such contemplations only that we are endowed with reason and sensibility.

Let us now turn our attention to those who, at this season of the year, give way to too much care and anxiety. When, in the depth of winter, and oppressed by many wants, they became anxious and melancholy, they deserved some indulgence; but, at this time, it is altogether unpardonable to doubt the care of Providence. Behold the lilies of the field, how they grow: consider the fowls of the air; they sow not, neither do they reap, yet your heavenly father feedeth them.—Spring is the season of hope; give it admission to your hearts. Let the pleasures which nature now lavishes upon us, lead us to rejoice in the inestimable advantage we have over so many millions of living creatures—of knowing God to be the author of all happiness.

MAY XXIX.

The Harmony and Patriotism of Bees.

HARMONY and patriotism are indisputably the foundation of that happiness which, in some measure, may be ascribed to bees, and without which their republic would soon be annihilated. Those who have made observations on this subject, inform us, that, when these insects return to their hive, loaded with materials for building, they find some of their companions ready to relieve them from their burden. The travellers begin their journeys again: and, while they are gathering more materials, the labourers who remained in the hive knead together the little the others had brought, and thus prepare a mass proper for their purpose. Some

who are not immediately employed in building, are busied in carrying food to the labourers, and in rendering them other kind offices, that the work may go on without interruption. This harmony nearly resembles the patriotism which is also observable amongst bees. The riches of the state are the riches of each citizen; and this numerous republic consists only of one family. Here there is no self-interest, no avarice, and consequently, no rapine. Here the bees never assemble together to use violence, or to fight with their fellow-citizens. Here no bee is ever found ambitious of acquiring superfluities, while another is in want of necessaries; nor do they ever strive to acquire more honey when they have laid up a sufficiency of provision for the winter.

Insignificant as these insects may appear, they may still teach us virtues on which the repose and happiness of our lives depend. In whatever rank or condition we are placed, it is necessary to act in concert with our fellow-creatures as patriots; the society in which we live, Christianity, and our own happiness, require it. Let each of us, therefore, cheerfully bear our part in the general burden; and, if it be necessary, let us even take upon us the burden of others, who, through ignorance or weakness, may be deficient. And if it happen, that religion, duty, and conscience, require us to make great sacrifices for our brethren, let us not consider this as an evil: but rather esteem it an honour that we are capable of labouring with greater zeal and success than others. Let no vile selfishness ever find room in our hearts: for those who seek to enrich themselves at the expense of others, are contemptible members of society. When we can in any way contribute to the general good, let us not be deterred from it by the fear of receiving no reward: the testimony of a clear conscience and the blessings of eternity, are sufficient recompense. It is too true, however, that one of the greatest evils of life is a want of harmony among the individuals of the human race; for there is, in reality, no such thing as perfect agreement in sentiments and characters; but even this ought to make us admire the wisdom of Providence, which, notwithstanding the disunion and disorders in the world, notwithstanding the self-interest which governs mankind, still keeps up society, and makes it flourish. When a pilot knows how to direct

his ship, so as to avoid the sand-banks against which it might be driven by the waves, we naturally admire his skill and experience; and when we see, notwithstanding the wickedness of mankind, in the midst of the storms of passion, that wisdom and virtue are still preserved, we should admire the infinite wisdom of Him who governs the world.

MAY XXX.

The prodigious Number of Plants on the Earth.

Above twenty thousand different species of plants have been already observed, and new ones are daily discovered. By the help of the microscope, some have been found where they were least expected. Mosses and sponges have been classed among vegetables, and have discovered to the virtuosi flowers and seeds before unknown. Freestone is often covered with brown dark spots, and the same is seen on the best polished glass. This mouldy substance adheres to most bodies; and may be considered, as a garden, a field, or a forest, in miniature, where the plants, notwithstanding their extreme minuteness, have visible seeds and flowers. If we reflect on the quantity of moss which covers even the hardest stones and the most barren spots; on the quantity of herbs and grass; on the several sorts of flowers; on all the trees and bushes, each of which may be considered as an assemblage of a thousand different vegetables:—if to these we add the aquatic plants as slight and delicate as a hair, and most of which are still unknown; we may, in some measure, form to ourselves an idea of the multitude of plants upon our globe. It is particularly worthy of remark, that all these different vegetables grow up and are preserved, without detriment to each other; the Sovereign Disposer of all things having appointed to each species a place analogous to its peculiar qualities. He has distributed them upon the surface of the earth with so much wisdom, that no part of it is destitute, nor do they grow any where in too great abundance. Some plants require to be placed in an open field, and not in the shade, where they would at least grow languid and weak. Others can only subsist in water, where the different qualities of the fluid matter occasion great variety. Some plants grow in sand, o-

thers in marshy and muddy places. Certain vegetables spring above the surface of the earth, others unfold themselves within its bosom. The different strata of which the soil is composed, sand, clay, chalk, &c. have each their particular vegetables; thence it is, that in the immense garden of nature there is no spot absolutely barren. From the finest sand to the hardest rock, from the torrid to the frigid zone, each soil, every climate, has plants peculiar to itself.

Let us attend to another circumstance peculiarly worthy of admiration:—The Creator has wisely ordained, that, among this immense variety of plants, those which are most proper for food or medicine, either for men or animals, grow in greater abundance than those which are of less utility. Herbs are much more numerous than trees and bushes, grass is more plentiful than oaks, and vines are more abundant than rose-bushes. By this arrangement, the Creator has evidently designed the general good: for had the reverse been the fact—had there been more oaks than grass, more trees than herbs and roots, it would have been impossible for animals to have subsisted, and the surface of the earth would have been deprived of its most interesting charms!

In these cheerful days of spring, let the numerous vegetables which adorn the earth excite our souls to glorify the goodness of our Creator. Wherever we go, we walk on flowers and herbage, and as far as we can extend our views we discover the blessings of Heaven in every fertile field and meadow. Had every blade of grass the power of praising its Divine Author, how many millions of hymns would ascend from a single lawn! But the tribes of the vegetable kingdom have no need of language: their interesting dress, their immense numbers, and the advantages they afford to men and animals, sufficiently proclaim the goodness and power of their Maker.—Convinced of this truth, may we contemplate their excellencies with a becoming sense of gratitude to our God.

Almighty and most merciful Being! in this also does thy wondrous providence appear. It requires no effort of the mind to comprehend that thou art great and good: we need only contemplate thee in the immense world of plants.

MAY XXXI.

The Plurality of Worlds.

It is not so much through ignorance, as through self-love and pride, that we conceive *our world* is the only habitable part of the universe; that the sun was made merely to communicate light and heat to us, and that the moon and stars are of no other use but to brighten our nights, and show the traveller his way. The contemplation of the fixed stars is sufficient to confute this ridiculous opinion.

Their sparkling appearance demonstrates that they shine by their own light, and from their being visible to us, notwithstanding their immense distances, we may naturally conjecture them to be much larger than our sun. Is it, then, probable, that these celestial bodies, which are not luminous specks, but great suns; these numberless bodies, placed so far from our globe; should not have been created for better purposes? If they were only designed to serve as nocturnal lights to us, they would be of no use the greatest part of the year. The cloudy atmosphere which often surrounds us, together with the short nights which are bright enough without their assistance, would render them useless.—Those stars, also, which the naked eye cannot discover from their great distance, would be absolutely of no use; and the purpose ascribed to them would be better supplied by one single star nearer to us, than by so many millions at that distance. As the same reasoning may be applied to every use the stars are of to us, either in navigation or any thing else, it must be allowed, that we could not possibly account for the designs of those numerous suns, if no creatures, except those of our own globe, profited by their light and heat, nor unless they themselves served as habitations for different beings. This conclusion will appear still more natural, if we reflect attentively on the solar system. We have already observed, that the moon, in many particulars, resembles this earth: that there, as well as here, land and sea, mountains and valleys, islands and gulfs, are to be seen. Such affinities as these authorize us to conceive others; and to suppose, also, in the moon, minerals, plants, animals, and rational creatures. The ana-

logy between the moon and the rest of the planets, leads us to form the same conjectures of *them:* and as each star has to all appearance, like our sun, its particular planets; and as these undoubtedly resemble ours: we, in a manner, behold around us an innumerable multitude of worlds, each of which has its peculiar laws, arrangement, productions, and inhabitants. How numerous are the works of God! How glorious the starry sky! How great our Creator! Millions of worlds declare his glory; and the intelligent beings they contain acknowledge and adore their Maker. How forcibly does this incline us to join with the heavenly choir, in singing his praise, that it may resound over all the universe! How happy the prospect that opens to us, of that future state wherein we shall be acquainted with these worlds, and able to comprehend the wonders of them! How great will be our astonishment in discovering objects quite new to us, or at least very imperfectly known! In what splendor will the divine perfections appear, the power of which extends over a multitude of worlds, while some falsely imagine it reaches only to the little globe we inhabit! What endless subjects for glorifying the Creator and Ruler of all these worlds!

Hymn for the Commencement of Summer.

INFINITE Creator! when, in adoring thee, I contemplate thy power, thy wisdom, and thy providential care of every living creature, I know not how to express the praise I owe to such a Father and such a God.

Wherever I look, whithersoever I turn my eyes, I perceive and acknowledge the wonders of thy power; for all creation announces it with united voice.

Who has stretched out the azure canopy of heaven? Who has suspended the sun in the ethereal expanse, and called the stars by their names? Who has prescribed to the wind that measure of strength which directs its blowing? Who has commanded the clouds to pour their treasures upon the earth? It is thou, O God of majesty, whose goodness reacheth unto the heavens.

Thou, O God, restrainest the impetuous fury of the waves: the pealing thunder subsides at thy command; and in obedience to thy will, the trees are clothed with

verdure or enamelled with blossoms. Thou supportest the stupendous mountains, and thine infinite skill hath suspended the earth upon nothing.

The splendor of the sun, the solemn gloom of night, and the rude violence of the tempest, proclaim thy matchless grandeur. All nature invites me to glorify thy name. Rocks, hills, and seas; the meanest worm, and every blade of grass, unitedly exclaim, "Give glory to the Creator!"

How immense are thy works, O God of power! how conspicuous art thou even in the minutest objects! The animal which is too small to be perceived by the naked eye, is clothed by thee with flesh, bone, and nerves: by thee it exists, and its preservation is the effect of thy bounteous goodness.

Man is thy image upon earth—his soul, his sense, his organs, his all—are a series of wonders! Capable of being united to thee by faith, and formed for eternal life, how can we be sufficiently grateful for such amazing favours!

O my soul, sing hallelujah to Him who redeemed thee on Calvary, and thus obtained for thee the privilege of everlasting life. May thy faith and hope daily increase, and produce the fruits of pious gratitude. Let the universe combine with me to bless and adore my God; and let all that hath understanding adore his name, and serve him with reverence!

JUNE 1.

Difference between the Works of Nature and those of Art.

When we compare the works of nature with those of art, we find that the former have a decided superiority over the latter. The mere consideration that the productions of art are only *imitations* of nature, will suffice to prove this truth beyond a doubt. What artist is there that does not wish to come as near to nature as possible, and flatter himself he has succeeded, though, in reality, very far from it? He is not able to invent: and all he does must have been taught him by nature. Nature, is rich and various; art, is poor and uniform. In the vast kingdom of nature we find an inexhaustible treasure; and any one of its parts—a stone, a plant, an animal—affords us so many objects worthy of admira-

tion, that, in examining them with the utmost exactness, even to the smallest particle, we cannot discover the slightest imperfection. The works of art, on the contrary, are soon exhausted: for, on examining them with critical nicety, we soon lose the admiration they at first excited, and discover faults and imperfections not thought of before. What are the most celebrated statues in comparison of a single animal, insect, or worm? Nature is able, of herself, to produce the greatest master-pieces; whereas art borrows from her whatever may be termed beautiful, having nothing of its own. Nature, therefore, has the first claim on every thing which art possesses.

Let us add to this, that the works of art are far less durable than those of nature. When the former have been long destroyed, the others still subsist in all their primitive beauty. How superior the interior construction of the productions of nature to all the works of men! Compare, for example, the most ingenious machine to the mechanism of animals, and we shall be struck with admiration at the sight of the miracles of nature, whilst the master-piece of art will appear a mere bauble. Let us only consider ourselves with attention. The perfect and regular construction of our muscles and arteries; the wonderful circulation of the blood in our veins; the variety and number of movements in our limbs;—what proofs do they afford of the magnificence of God's works; and how poor and trifling, in comparison, are the productions of man!

It would be easy to extend these remarks, if what has been said were not more than sufficient to teach us the just value of the works of nature. It is true, that self-love carries us so far, that we are but too apt to prefer our own works to all others; and our taste is so depraved, that we look on every thing with disdain and indifference in which the industry of man has no share. Both these, however, prove our ignorance and ingratitude. Would it not be unjust to set less value on a watch, admirably finished by a great artist, than on a snow-ball made up by a child? In thus robbing the ingenious workman of the honour due to him, should we not prove, at the same time, our own ignorance and folly? This is exactly our case, when we do not properly distinguish between the works of nature and those

of art. It is true, we ought not to despise the productions of art, for they also have their value; but, on the other hand, it would be absurd to consider them as equal, and still more so to prefer them to the works of nature, which are infinitely superior. God made his works so perfect, that through them we might acknowledge his power, wisdom, and goodness. Let us therefore faithfully fulfil this great duty, and never give up the contemplation of nature, nor forget the effect such researches ought to have upon us. Let the study of nature be our delight, because it will teach us more and more to know the Creator and Ruler of the world, and will continually excite in us a desire to arrive one day at a more perfect knowledge of his works than we can acquire in this present world.

JUNE II.

Leaves of Trees.

The leaves of trees form one of the greatest beauties of nature. Our impatience to see them bud in spring, and our joy when at last they appear, prove sufficiently that they are the ornament of our gardens, fields, and woods. How great is the pleasure we enjoy, in the sultry days of summer, from the refreshing coolness of their shade! Yet, this is the least of the advantages which accrue to us from the foliage of trees. We need only consider the wonderful construction of leaves, to be convinced that they were designed for much more important purposes. Take the trouble to examine the first that falls in your way. Every leaf has certain vessels, which, being closely compressed at the extremity of the stalk, extend themselves, like ribs, within the leaf, and branch out in various directions. There are no leaves that have not extremely fine vessels, and an astonishing number of pores. For example, it has been observed, that, in a sort of box-tree, called *Palma Cereris*, there are above a hundred and seventy-two thousand pores on one single side of the leaf. In the open air, the leaves turn their upper surface towards the sky, and the under towards the earth, or towards the interior side of the plant. To what purpose would this particular arrangement be, if leaves were of no other use but to adorn trees, and to

afford us an agreeable shade? Most certainly the Creator had something much more important in view.

The nutrition of plants is carried on particularly by the leaves; as their pores serve to imbibe humidity from the atmosphere, and to communicate it to the whole plant. What wisdom appears in this organization! By this means, plants, in dry seasons, do not run the hazard of perishing for want of moisture: they receive abundance of refreshing dew, which, falling from the upper leaves, waters the lower ones; so that all receive a portion, and none of the nutritious juice is lost. It is found by experiments that plants perspire to a considerable degree, and the leaves appear to be the chief organs of this function. They also serve to introduce a necessary quantity of air into the interior of the plant; and they evidently contribute to the preservation of the buds which are to bloom the following year: hence many trees, when stripped of their foliage, wither and die. This sometimes happens to the mulberry tree, when it is stripped, without proper caution, to feed silk-worms; and this is the reason that grapes do not ripen when the vine has been divested of its leaves in the summer.

Another remark may be made on this subject, in order to illustrate the manner in which plants acquire their gradual growth. The lower surface of a leaf which is turned toward the earth, is always of a paler colour, and more rough and spongy than the upper side. Here again we discover the wisest contrivance: the side of the leaf next the ground has more asperities, and, consequently, more pores, that it may the more effectually imbibe the dew which is exhaled from the earth, and afterwards distribute it with more facility and abundance to the whole plant. The leaves, therefore, turn to that part whence they receive the most nourishment; and this is the reason that the leaves of some plants hang very low down. If we observe the trees which grow on steep mountains, we shall find that their leaves do not take a horizontal direction, but a perpendicular one; which proves that they direct themselves to that quarter whence they may receive most nourishment.

These reflections afford us another opportunity of admiring the wisdom of God; and should induce us to consider the leaves of trees hereafter in a different light from what we have hitherto done. Were we ignorant

of the inimitable art of their construction, or the important purpose of their existence, it would not be wonderful that we should see them with neglect and indifference: but when we know that each leaf is a masterpiece of Divine Power, and an organ of fertility, it would be unpardonable to regard them with inattention. They ought naturally to lead us to the following useful considerations:—Every thing, even the least object in nature, has been planned by the wisdom of the Creator. Not a single leaf is created merely for ornament: it contributes its share towards the fertility and support of the vegetable kingdom. If each leaf, then, be a master-piece of Divine Wisdom, what wonders does a single tree present to our eyes! The faculties of our minds cannot comprehend one of these miracles; and the smallest leaf may afford subject for reflection as long as we live.

JUNE III.

The vivifying Power of the Sun.

I MYSELF feel this beneficent power. As soon as the sun rises over my head, it fills my soul with serenity and joy. Its splendor and warmth inspire me with spirits and activity sufficient to fulfil the duties of life, and to enjoy the charms of society. The involuntary indolence and lowness which made me inactive in winter, have been gradually dissipated. I breathe more freely, and employ myself with greater pleasure. How can it be otherwise, when I witness the universal joy which the sun communicates to the world, and every where perceive its enlivening power? He animates and revives all creatures with his benign influence; millions of shining insects awaken, sport, and bask in his rays; the birds salute him with their melodious concerts; every thing that breathes rejoices in his presence; and we every where trace his beneficial effects. He causes the sap to rise and circulate through trees, plants, and vegetables; he causes the leaves and blossoms to shoot; he diffuses life and light throughout all nature; and he is the source of that warmth, without which every animal would languish and die. The influence of the sun is not only felt on the surface of our globe, but even in subterranean caves, where it gives life to animals and

produces metals: it penetrates even into the highest mountains, though composed of rocks and stone; and extends even to the bottom of the ocean, where it acts in a variety of salutary ways.

When we reflect on these effects of the sun, it is natural to think on the miserable condition we should be in, if we were deprived of the light and heat of that celestial body. Without him what would our globe be but a lifeless mass, alike destitute of order and beauty? The trees could not produce leaves, nor the plants flowers; the fields would be without verdure, and the country without harvests: all nature would assume a gloomy and mournful aspect.

Such precisely is the condition in which the moral world would be found, were it deprived of the vivifying grace of Jesus Christ. Had he not brought life and immortality to light by his blessed Gospel, we should all have been completely buried in the clouds of ignorance, or the gulf of despair. Without the animating power of his grace, we should bring forth no acceptable fruits; but the rank weeds of vice would rapidly spring up, and choke every seed of virtue and piety. Whither could we have fled for consolation or felicity, if the adorable Redeemer had not procured them for us by his humiliation and intercession? Sitting in the valley of the shadow of death and bound with chains, we should have groaned for emancipation without effect. Surely then our hearts should expand with the most grateful joy and exultation when we reflect on the inestimable blessings bestowed upon us by the Sun of Righteousness.

The sun, in its reviving power, is the emblem of a truly charitable man. He also spreads joy and blessings around him; and by him the oppressed heart is raised and strengthened, the afflicted are comforted, the ignorant are enlightened, and the poor relieved. Let us endeavour to resemble this beneficent character. Let us, according to our different stations, share with our fellow-creatures the goods which Providence has bestowed upon us. Let us instruct, comfort, and relieve all we can. Thus we shall quit this world regretted and beloved; and thus shall our memories be blessed by our surviving brethren.

JUNE IV.

The Desires of the Soul are infinite.

Let us employ a few moments in reflecting on ourselves. The soul has certainly the first claim to our attention: it concerns us nearly, and ought to be dearer than all the pleasing objects which this season so particularly affords. Whatever satisfaction we find in contemplating the corporeal world, it cannot be compared to that which we experience in reflecting upon the nature and faculties of the soul. The observation of external objects, such as the traveller meets on the road, is certainly agreeable to him, because he requires to be amused and refreshed through his pilgrimage; but that of spiritual objects leads directly to the blessed immortality we may expect, as citizens of the world to come. Let us, therefore, sometimes reflect on the desires implanted in our souls by the Creator. Experience proves, that our thirst of knowledge can never be fully gratified. We have no sooner made one discovery than we aim at another. Our desires are never satisfied; and when we obtain what we had most ardently wished for, we begin to form new wishes. The desire of acquiring greater and more numerous blessings accompanies us through the journey of life, and exists even in the moment of separation from all sublunary concerns.

What conclusion can be drawn from this, but that, as our desires continually extend into futurity without being ever fully gratified, there must be blessings beyond the limits of this present life? We are not, then, designed for this transient life alone, but for an everlasting one. Is it probable, indeed, that man should be the only creature on earth endowed with faculties, without having, at the same time, the destiny for which those faculties were bestowed? that man should have an instinct, without the means of satisfying it, and be, in this respect, lower than the brutes? When a beast is hungry or thirsty, it generally finds means to supply its wants. We see the silkworm spin its cone, and shut itself up for its transformation: this would not happen if it were not designed for another state, in which it is to appear again under a new form. We see that birds lay eggs: would this be the case if these eggs were not to serve

for the preservation of their species, or that of other creatures? if our existence, then, were to be confined within the narrow limits of this life, why should we have received inclinations and desires which cannot be gratified? why those faculties, which we could never make use of? No, certainly; our heavenly Father has not implanted endless desires in our souls to no purpose, much less to make them our tormentors.

Being of beings! our souls are capable of being filled with thy Spirit; we are capable of being united to thee for ever; we may be raised above all earthly things, and soar even to thee. Is it then possible that souls such as these should be annihilated? that we should have learned to know, to love, and to aspire to thee, in vain? For we are far from it here below; we know thee but in part; our love is yet faint and weak. It is impossible that all our happiness can consist in this.—Surely all the blessings we possess upon earth are only pledges and forerunners of the infinite felicity which awaits us hereafter.

This explains and reconciles every thing; and we may clearly see our future destination. We perceive it is not in vain that we wish continually to increase in wisdom and virtue, and to draw nearer unto God, the source, the origin, and model of all perfection. We see that the happiness we cannot enjoy here, or, at least, but for a short time, we shall possess to all eternity in a future state of existence. If we aim at perfection, we shall obtain it. No propensity, no desire, no faculty of the soul, was given in vain: they will all be fully gratified and employed in a blessed eternity. Let us, therefore, rejoice in the immortality of our souls. God himself has given us the sense of eternity. Let us not then dwell on visible, but on invisible things. In the midst of all the pleasures we here enjoy, of all our flattering hopes, let us aspire to those pleasures, hopes, and unspeakable blessings, which are reserved for us in a better world. Let us employ the noble faculties of the soul in aspiring to heaven, for which purpose they were properly designed. Let us preserve our souls, which were created and redeemed for immortality, from the seduction of the senses, that they may not be absorbed in trifling pleasures unworthy of them.

JUNE V.

The Utility of Rivers.

When we calculate the space which rivers occupy, we find they take up a considerable part of our globe. Some persons are discontented with this arrangement, and imagine it would have been more advantageous if there had been fewer rivers, and a greater proportion of land. But if they would only consider, with what wisdom the Creator has planned every thing upon our sphere, they would conclude, that rivers have not been diffused over the earth without good reason and essential use to men and other creatures.

In the first place, we may observe, that the water of rivers affords a very wholesome beverage. Spring or pump water, when it has remained long under the earth without motion, detaches, and carries along with it, or holds suspended, particles of matter which may be injurious to health; but river water, which is continually evaporating, and constantly undergoing agitation purifies itself from all these, and becomes the most salubrious drink for men and beasts. The utility of rivers, however, extends still farther. Is it not to them that we owe the neatness, the wholesomeness, and comfort of our houses, as well as the fertility of our fields? Our habitations are always unhealthy when they are surrounded by marshes or stagnant water, or when the want of water occasions a drought. By the proximity of rivers the atmosphere is cooled and the earth is fertilized.—What an astonishing difference between a country well watered, and one to which nature has denied this blessing! the one is dry, barren, and desert; the other, on the contrary, is, in some sort, a garden of delights, where woods and valleys, fields and meadows, present a thousand beauties, and the most pleasing variety. A river meandering through a country carries with it health, prosperity, and abundance: it not only irrigates the plants, but also fertilizes the earth by its constant evaporations and inundations. Who can be so inattentive or ungrateful as not to acknowledge how useful rivers are to whole countries, when we daily derive such numberless advantages from them? Commerce could not be conveniently carried on unless our merchandise

were transported, through the medium of rivers, from distant countries. Without their assistance, mills and other pieces of machinery would be stopped; agriculture would be impeded; and the tables of the luxurious be deprived of some of their greatest delicacies.

It may be said, that if there were no rivers, we should escape those inundations which sometimes occasion considerable damage. When they overflow their banks, they may certainly produce much havock and devastation in flat level countries. But is this inconvenience sufficient to prevent rivers from being a blessing of Providence? Are not the innumerable advantages we derive from them far superior to the mischiefs which they sometimes occasion? Inundations happen but seldom, and extend only over a small tract of country. Besides, whatever ravages they may cause in the inundated countries, they ultimately produce much good, by enriching and manuring the ground; and therefore they prove, to an attentive observer, that while God appears to chastise with one hand, he dispenses blessings with the other.

Thus, then, the rivers ought to convince us of that divine goodness which extends over all the earth. We see that every part of nature, and all the elements, combine to make us happy, and to procure us a thousand conveniences. If only one of the blessings of God failed us, that privation would destroy much of our happiness. If there were no rivers, there could be no fertility, and the earth would become a barren heap of sand. What innumerable multitudes of creatures are there which can neither live in the air nor on land, which would suddenly perish, if the Almighty hand, which created rivers, were to dry them up!

JUNE VI.

Variety of Flowers.

We cannot but be struck with astonishment, when we consider the prodigious number of flowers produced in spring, summer, and autumn. But the *variety* amongst this numerous tribe is, perhaps, still more surprising. Certainly, nothing but a Divine Power could cause such numbers to grow; while this power must have been united with wisdom equally great, to produce such in-

finite variety. If they had all been perfectly alike, the sameness would have fatigued the senses; and if summer produced no fruit or flowers but such as spring affords, we should soon be weary of contemplating them, and of bestowing on them the care and cultivation which they require.

It is, therefore, a proof of the divine goodness that the productions of the vegetable kingdom are so agreeably diversified, and that such novelty of charms is added to their other perfections. This variety does not only extend to whole *tribes* of plants, but also to individuals. The carnation differs from the rose, the rose from the tulip, the tulip from the auricula, and the auricula from the lily; but each carnation, rose, tulip, lily, and auricula, has also its own particular beauty and character. Every one has something peculiar to itself.—There are not two flowers of the same species perfectly alike in form and shades. Take a view of a bed of flowers in a parterre; some are of an extraordinary size, and seem to reign over all the rest, others are of a middling rank; some bear their stately heads above the height of man, others creep upon the ground; some exhibit the most dazzling colours, others are simple and make no show: some perfume the air with exquisite odours, whilst others only please the sight with their beautiful tints. The variations in flowers are not less remarkable in the different seasons of the year. In spring, when men leave the cities, in order to go and view the productions which a bountiful Creator grants for their subsistence, they see the blossoms in full splendor and beauty. Towards summer, when the attention is particularly led to sowing seeds, thousands of flowers present themselves to the sight, and form a beautiful scene. They succeed one another regularly, and in the order designed. When winter at last arrives, it brings other plants with it, which, though they may not please the eye, have their uses. If we observe the whole race of vegetables, we shall still find new and greater varieties. How vast a difference, and how many links do we discover between the grass which grows among the stones, and that excellent plant which affords us the best nutriment, and which is justly termed the "staff of life!" In plants which creep and twine about each other, what a difference between the ivy, which clings to

the mouldering battlement, and the vine, whose fruit affords such delicious drink! Amongst the trees, what a difference between the wild plum-tree and the oak!

With what wisdom has God arranged all his works! This is the natural conclusion to be drawn from these reflections. How admirably is the whole plan of the vegetable kingdom formed, and how perfectly executed! In all his works the *useful* and *agreeable* are united. For it is not merely to gratify our sight that he has formed plants so astonishingly different from each other. Each revolving month is marked with the divine goodness, and every gift affords our nerves new pleasures and our hearts fresh occasions of love and gratitude.—Had the proofs of our Maker's bounty been more uniform, our inattention might have admitted of some excuse; but as they are so interestingly varied, we are altogether unpardonable if we behold them with indifference. Let us therefore, in the presence of the whole creation, adore the Almighty Architect, with becoming sentiments of respect and veneration. In contemplating the surprising varieties in the vegetable kingdom, we are compelled to acknowledge that both his wisdom and his goodness surpass our comprehension. Let us no longer behold the diversified beauties of plants and flowers without adoring the Creator, and acknowledging his wisdom, power, and goodness.

JUNE VII.

The Use of venomous Plants and Animals.

EVERY thing on earth, considered separately, is good and wholesome; and, if any thing becomes hurtful, it is because we make a bad use of it, instead of that for which it was designed. Hence it is, that the food which preserves the life of one animal, destroys another; and that a plant, which, in some cases, is considered as poisonous, in certain circumstances is very useful and salutary. Hemlock, for example, was formerly considered deadly poison, but multitudes of experiments have lately proved that admirable cures may be effected by it. The multitude and variety of vegetables which grow upon the earth is prodigious: but we must not imagine they were all created for the food of man: some are designed for beasts, others furnish us with dress and orna-

ments; some please our taste and smell; and great numbers are medicinal, and would be of the utmost service in many maladies which men and animals are subject to, if they were not adulterated. The same thing may be said of many living creatures, which, though dangerous to us, are very useful to other animals, either as food or medicaments. Many birds feed upon insects which are considered as noxious: domestic fowls, for instance, are fond of spiders: and storks and peacocks will feed upon serpents. If we also consider how many excellent medicines are composed of the most venomous herbs, nothing can be easier than to justify the wisdom and goodness of God in the formation of creatures, which answer so many beneficial purposes.

The following reflections may further illustrate this subject.—The number of noxious plants and animals is nothing in comparison of the multitude of those that are of the greatest and most obvious utility. The Creator has also implanted a natural instinct in men and animals, which induces them to avoid whatever might be prejudicial to their nature. Mischievous beasts have a certain fear of man, and scarcely ever use their offensive arms against him unless they are attacked or provoked. Besides, the most noxious animals have evident marks and characteristics by which their dangerous properties are easily known; that, by being warned, we may avoid or prevent the danger. The rattlesnake, the most dangerous of serpents, gives warning of its approach by the clattering of the rings in its tail. The crocodile is so heavy in its motions, and turns with such difficulty, that it is very easy to escape from it. Divine goodness has even so wisely disposed things, that the most dangerous and venomous animals furnish the antidote for their own poison. Thus the oil of the scorpion is an infallible remedy for its sting: a bee bruised and rubbed on the part, cures the wound it has made; and the fat of vipers is an excellent remedy against their bite.

Some persons are of opinion that it would be better were there neither noxious plants nor animals upon the earth; but such an idea is the mere result of ignorance and selfishness. If God have ordained that one creature should hurt another, it is for very wise purposes; and from this plan there accrue to us many important advantages. Several creatures which appear hurtful,

are not really so, at least in certain respects: their poison, and even the organs they make use of to wound others, are absolutely necessary to themselves. One example may serve for all the rest: the bee often inflicts pain with its sting, but if this be taken away the bee can never be of any use afterwards. It is the same throughout all nature; that which appears hurtful, is, in reality, indispensably necessary. Wherefore, then, has man the presumption to decide what is useful or injurious in nature? Who can say it is contrary to the wisdom of God that we should sometimes feel pain? Do not the most disagreeable things often procure us the greatest advantages? In general, it is certain, that natural things are only accidentally injurious, and if we receive harm from them, we may always blame our own imprudence.

JUNE VIII.

The Perfume of Flowers.

A THOUSAND pleasing, cheerful objects surround me on all sides. Every thing I see, every thing I hear, all the sensations which smell or taste can produce, contribute to my enjoyment or happiness. Every thing in nature combines, in this beautiful season, to fill my mind with the sweetest and purest delight, and to lead my heart towards God. Every object that excites my admiration, inclines me to look up to him as the source and giver of all my gratifications. Each blossom is a proof of his power, and a mark of his existence.

I will, at present, confine myself to the pleasure I receive from the agreeable and diversified odour of flowers. It would have been a great instance of God's goodness, to have pleased the eye alone by that wonderful variety which appears in the vegetable kingdom, but he has graciously added, to the other charms of flowers, that of sweet perfumes; and there is as much variety in these odours as in the flowers themselves.—Though we cannot exactly determine in what this difference consists, we perceive it sensibly in going from one flower to another. It is also remarkable that the smell is neither strong enough to hurt the head, nor weak enough to lose its pleasing influence. The particles which emanate from flowers are so extremely light

and fine, and become so widely diffused, that they can produce no inconvenience. The effluvia from a single grain of amber can perfume an apartment twenty feet square and fifteen high; and the odour of the rosemary which grows in Provence may be perceived at sea, at the distance of twenty leagues.

But how is it that vapours which are exhaled from plants, can so easily reach the organs of smell? This must be partly attributed to the construction of the nose. It is composed of two cavities, separated by a partition. These unite by degrees, and end in one only, which reaches to the bottom of the throat, where there is a communication with the mouth. All this cavity is lined with a membrane, which is one continual series of nerves. These proceed from the brain, through a bone pierced full of holes, which, on that account, is called the *os cribosum* or sieve-like bone. The nostrils being wide at the bottom, and contracting gradually upwards, the odorous particles are accumulated towards the top, when the air is inhaled through the nose; and consequently the nerves are more powerfully affected by them. By these means we receive the impression of even the weakest odours. We may also observe, that divine wisdom has formed bony plates, which stop the upper part of the nose, and which have a twofold use: they prevent any thing hurtful from entering into the breathing passage during sleep, or when we are unable to guard it otherwise; and they receive and support the ramifications of the olfactory nerves, a great number of the branches and filaments of which are dispersed on these plates; and by that means, these nerves meet every where the odoriferous corpuscles, which strike them when they enter the nose with the air.

How just is it, that we should bless and adore our Creator for these excellent arrangements! In this interesting season of the year, we plainly perceive that the sense of smelling is a real blessing, without which we should be deprived of half the charms of the vegetable kingdom. But do we appreciate this as we ought, or are we duly sensible of our Maker's kindness! Whenever we inhale the delicious odour of a pink or a rose, let us reflect on the bounty of that God who has, even in this particular, provided for our felicity. While we walk amidst our gardens, and respire a perfumed atmo-

sphere, let us elevate our souls to *Him* who has established the mode in which we receive so many agreeable impressions. And while we contemplate the expanding flowers, which literally impregnate the passing zephyrs with their fragrance, let us learn, how desirable it is to diffuse around us the balsamic odour of good works, and to unite mental charms with personal accomplishments.

JUNE IX.

The Multitude of Animals.

NATURALISTS who have taken the trouble to calculate the gross number of animals on our globe, have discovered about four hundred thousand species. And, however prodigious this number may appear, it is by no means exaggerated. There is reason to suppose, that, in the known parts of the earth, there are, of land animals, more than four hundred and fifty species; of birds, six hundred; of fish with scales, two thousand; of shell-fish, three thousand; and of insects visible to the naked eye, more than twenty thousand; besides those which belong to various kinds of animals, amounting to near a hundred thousand species. There are also immense tribes of insects entirely unknown to us, which may be reasonably estimated at two hundred thousand. We must likewise take account of those insects which subsist entirely on plants; and as eighteen thousand varieties of plants have already been described, if we allow each to contain only four species of insects, the number of these will amount to seventy-two thousand! Such a number of animals living on our globe certainly appears prodigious; but it will not be found too much, if we believe, with some naturalists, that every part of the empire of nature is filled with animated beings. Very skilful physicians have maintained, that the disorders which are attended with blotches and pimples, and even certain fevers, are occasioned by animalculæ. It is also probable, that the atmosphere is sometimes peopled with animals, although their extreme minuteness prevents them from being visible. And who can tell whether that tremulous motion observed in the air during summer may not be produced by millions of insects swarming in the atmosphere? Let us take the first flower that falls in our

way—for example, a daisy or a rose—and we shall discover a multitude of insects, whose figure and various motions will amuse us. Is there the smallest spot in nature where living animals may not be found? Nature has even produced animals in others, and made one to be as a world for other creatures to subsist in. The air, the juices of animals and plants, corrupted matter, excrements, smoke, dry wood, and even the hardest stones, in some measure feed, and serve to lodge, living creatures. The sea seems to be an element composed of animals. The light which is observed on it in the summer nights, is owing to an innumerable multitude of little luminous worms; whose parts, when divided from the body, and corrupted, still shine, as the worm itself did when alive. Whole swarms of animalculæ, which the eye cannot reckon, flutter and sport in the rays of the sun. And all these innumerable animals of our little globe are infinitely diversified in their form, organs, members, faculties and motions. Endeavour, O man! to name all these animals; undertake to express by numbers the individuals of one single species; attempt to calculate how many herrings, flies, worms, birds, &c. there are. How could you do it! Their number is unknown; and, if it were not so, it would be impossible to express it by figures.

Here we have a fine subject for admiration, in reflecting on the infinite power of our Creator. He alone produced, and he alone preserves and supports, this immense multitude of creatures. Consider how much food such a number of animals require. If they only lived at each other's expense, if they destroyed one another, nature would present us with nothing but a frightful scene of murder and slaughter. But, happily, there are not many carnivorous animals; and these are very useful in devouring carcases, and, by that means, guarding us from infection, as well as preserving a certain balance, by preventing the different species from multiplying too fast. Besides, the Creator has wisely designed the vegetable kingdom for the food of animals; and he has assigned to almost every species of beasts a particular kind of plant. In order that all sorts of animals should find food in proportion to their number, he has ordained that they should live in the different countries of the earth. How exactly has he even measured

the ground! A single tree is larger than several thousand plants; yet it occupies only a surface of a few square feet; and a multitude of quadrupeds, birds, and insects, dwell there, and are nourished by it. What concern has the Creator shown, in surrounding all animals with a fluid matter adapted to their different natures: two sorts of fluids are destined for them—the one water, the other air. All living creatures are distributed through these two elements, except a few amphibious animals, which live partly in both. The bottom of these two fluids is the habitation of a part of those animals. Such as are in the upper fluid are reptiles, and most of the quadrupeds; and, in the lower sea, the zoophites, shell fish, corals, oysters, &c. Others have the power of ascending or descending as they please in their element; as the birds and insects do in the air, and as the whales and most other fish do in the water.

Does the atheist dare to say in his heart, *There is no God!* Senseless man! "Go and ask the beasts, and they shall teach thee; and the fowls of the air, and they shall tell thee: or speak to the earth, and it shall teach thee; and the fishes of the sea shall declare unto thee. Who knoweth not, in all these, that the hand of the Lord hath wrought this?"

JUNE X.

Immensity of the Firmament.

Approach, O man! and contemplate the firmament. Consider that multitude of brilliant lamps which illumine thy nights. Endeavour to count them; but thy feeble sight is incapable of doing it, and thy eyes lose themselves in the confusion of infinitude. Call to thy assistance the powers of the telescope. What dost thou now see? To the first millions, new millions of worlds are added. Continue these observations, and undertake to count the stars thou hast discovered. Thy ideas are confounded: thou seest that it is beyond the power of numbers to express such immense multitudes.

It is true, that, for many ages mankind have endeavoured to ascertain the number of the stars; but the discoveries made in the heavens, since the invention of telescopes, plainly prove the difficulty, if not impossibility, of acquiring a satisfactory knowledge of this im-

portant subject. To count the stars seems to be as impossible as to reckon the grains of sand on the sea-shore. However, before telescopes were made, we could not discover so many as are now visible. One of the most ancient astronomers reckoned but one thousand and twenty-six; and this catalogue was afterwards increased to one thousand and eighty-eight. But the observations made since, by the assistance of telescopes, have convinced mankind, that the human sight cannot discover all the celestial bodies. By means of instruments we learn that the long and luminous tract in the sky, called the Milky Way, is composed of innumerable stars. We also know, that, in places where formerly we beheld but a single star, we now discover many, with the assistance of even a middling telescope. By this mean, likewise, we now distinguish, in two constellations alone, twice as many stars as were formerly reckoned in the whole sky. How has this enlarged our ideas, in respect to the greatness of the universe! But if the discoveries already made have so increased our admiration of the immensity of the divine power, it will rise still higher, when we reflect on the magnitude of these bodies, many of which, notwithstanding their prodigious distance, are visible to the naked eye. The most exact calculations inform us, that a cannon-ball shot off from the nearest fixed star, would be more than seven hundred thousand years before it could reach our globe; and yet the greatest astronomers agree, that these numbers are not sufficient to express the apparent distance of one of the fixed stars from our earth.

Some of these globes appear larger than others, because they are nearer to our earth, and on this account we call them stars of the first magnitude. Those nearest to them are called stars of the second magnitude, because, being much farther from us, they appear smaller: they must be at as great a distance from the former, as the latter are from us. Those of the third magnitude, must be three; those of the fourth, four times farther from us than the first, and so on. Supposing that there are only twenty of these different orders, it will follow that the diameter of the earth is so great that a cannon-ball could not traverse it in twenty-five millions of years. The distance of the fixed stars is too great to be computed. It is conjectured that Sirius,

probably the nearest of all the fixed stars, is distant from the earth not less than 32,000,000,000,000 of miles; which is farther than a cannon-ball would fly in seven millions of years!

Sovereign Ruler of the universe! Father of spirits and of men! O that my ideas were vast and sublime as the expanse of the heavens, that I might worthily meditate upon thy greatness! that I might raise them even to these innumerable worlds, where thou displayest thy magnificence still more than on this earthly globe! that, as I now pass from flower to flower, I might there go from star to star, till I arrived at the august sanctuary where thou sittest on the throne of thy glory! But my desires are vain, while I am a sojourner upon earth. I shall not know the wonders of the heavens, till my soul is delivered from the encumbrance of this gross body. In the mean time, as long as I live in this world, I will sing thy praise.

JUNE XI.

Singularities in the Vegetable Kingdom.

The difference between animals is so great, that at first view it appears difficult to find any resemblance between them and plants. Some creatures live only in water; others only on land, or in the air; and some can live equally well in either. And it may be said, literally, that it is the same in respect to vegetables: there are plants which only live in the ground; others in water; some can scarcely bear any moisture; others live equally in land or water; and there are even some which exist in the air.

In the island of Japan, there is a tree, which, contrary to the nature of all other plants which require moisture, cannot bear it. As soon as it is watered, it withers; and the only way to save it from dying, is to cut it down to the root, to dry it in the sun, and afterwards plant it in a dry and sandy soil. It is known, that a sort of mushroom, of moss, and other small plants, float in the air; but a more extraordinary thing is, that a sprig of rosemary, which was put into the hand of a dead person (according to the custom of some countries), took root so well to the right and to the left, that, at the end of some years, when the grave was o-

pened, it had covered all the face of the corse with its leaves.

The vegetation of the truffle is still more singular: this extraordinary tubercle has neither roots, stalk, leaves, blossoms, nor even any visible seed: it draws its sustenance through the pores of its bark. But how it is produced, or why, in general, there should be no other herb where these sort of mushrooms grow, and the earth be light and full of crevices, has not yet been accounted for.

There is no plant which can be more aptly compared to amphibious animals than that sort of membraneous moss, called *nostoch*. It is an irregular body, a little transparent, and of a pale green colour: it trembles when touched, and is easily broken.

It is never visible in dry weather; but after rain it is found in many places, particularly in uncultivated land, and on the sides of sandy roads. Such is the rapidity of its growth, that it seems to be formed almost in a moment; for when, in summer, walking in a garden, not a trace of it is to be seen, if a shower of rain descend, and the same place be visited an hour afterwards, the whole walk will appear nearly covered with it. For a long time it was supposed that the *nostoch* fell from the sky; but it is now known to be a leaf, which attracts and imbibes water with great avidity. This leaf, to which no root has been discovered, is in its natural state when impregnated with water; but heat, or a high wind, makes the water evaporate in a few hours, and then the leaf contracts, and loses its transparency and colour. Hence it appears to grow so suddenly, and to be produced in so miraculous a manner by a shower of rain; for, when fresh rain falls upon it, though before dried and invisible, it is reanimated, and appears as at first.

It would be no difficult task to enumerate a variety of plants which bear a resemblance to animals; but there are other peculiarities in the vegetable kingdom which demand and deserve our attention. The whole atmosphere is filled with millions of invisible plants and seeds: even seeds of a larger sort are scattered by the wind over all the earth; and, as soon as they are thus transported to places where they may best germinate, they become plants, and often so little soil is necessary for this purpose, that we can scarcely conceive whence they

derive the requisite degree of nutriment. Hence we see large plants, and even trees, which take root and grow in the clifts of rocks, without the least appearance of earth.

Vegetation is sometimes effected with inconceivable speed: for example, if the seed of mushrooms and watercresses be put into wet linen, it will become a salad in twenty-four hours. There are plants which appear to have scarcely any life, and yet continue to exist. We often see willows not only hollow and decayed within, but the outer bark so considerably damaged that scarce an eighth part of it remains. These trunks however, poor as they are, bud out again every spring, and shoot into numberless branches and leaves. How wonderful is it, that the nutritive juice of plants is not only supplied by means of the root, but also by the leaves, which draw it from the air, and in some degree pump it in! and that there should be plants, the branches of which become roots, and the roots branches, according as they are turned in planting them! How surprising also is the great age to which some trees arrive! There are apple-trees which must be above a thousand years old; and, if we calculate in the gross the fruit which such a tree produces annually, we shall find that a single pippin might have furnished all Europe with trees and fruit of this species. So extensive is this subject, that, were we to attempt pursuing it through all its ramifications, it would lead to an almost endless train of reflections. All nature teems with wonders; and every thing leads to that infinitely perfect Being, whose wisdom, power, and unbounded goodness unite to pour blessings and enjoyments upon our heads.

Ungrateful as we are, shall we not reflect on the innumerable wonders that continually surround us? Can we refuse to bless that God who does such great and admirable things? Shall we not sanctify the pleasures which the country and gardens afford us, by contemplating the wonders of the Lord; by looking from the creature to the Creator: from the flower to Him that made it?

O Lord, how great and magnificent are thy works! What wonders present themselves on every side! I view them with astonishment, and am lost in the contemplation: they surpass my comprehension, and it is in vain

that I attempt to fathom them. At thy command, the grass puts forth its tender blade, and the groves are clothed with verdure; the flowers embalm the air, and adorn the fields and gardens with their glowing colours; the umbrageous trees elevate their heads to the clouds, and the mountain cedar declares thy glory. On whatever side I turn, new wonders salute my eyes. The meadows, the mountains, and the valleys, the widely extended ocean and the purling rivulet, all, from the lowest atom to the highest sphere, combine to announce the goodness of the Lord!

JUNE XII.

Means of Happiness found in Nature.

To be convinced that, throughout nature, every thing tends to the benefit of mankind, we have only to consider the close connexion and relation between ourselves and all natural productions. It is true, there are several bodies, whose utility, with respect to man, we do not perceive; but we must not thence conclude that they are really of no advantage. Many things which were totally disregarded in the days of our ancestors, are now highly esteemed on account of their utility; and we may naturally expect that our posterity will discover many useful things, of which we are completely ignorant. In this, we should acknowledge the Divine Wisdom which has concealed from us the real use of many creatures, in order to humble our pride, by making us feel how limited our understandings are, and to exercise our minds in the contemplation of God's wonderful works.

Many things in nature are only indirectly useful to us: several animals serve as food for mankind, and consequently whatever tends to nourish them, is beneficial to us. Small fish are the food of the larger; many birds feed on worms and insects: and there are several species which live entirely by prey. The Divine Wisdom manifests itself again in this circumstance; for if the productions of the earth formed the sole nourishment of animals, there would not be enough left for the use of man; and what would then be the fruit of his labour?

I allow that there are several animals which might be said to be created only to hurt mankind; for example, venomous creatures. Poison is so injurious to the hu-

man body, that it generally causes a painful death; and its effects are sometimes so quick, that there is no time to have recourse to antidotes. It is true, that, in this respect, many animals appear in a disadvantageous point of view; but, if we consider them in another light, we shall discover traces of God's goodness, and have reason to admire his wisdom. Physicians make use of poison in many excellent medicines. And can we suppose that mankind would have been happier if no venomous creatures had received an existence? The very poison which they carry is partly derived from noxious vapours which we could not have respired without injury. In a word, it may be said with confidence, that there is nothing on earth really hurtful to man, unless he make an improper use of it.

But if, in creating our globe, God proposed to himself our felicity, should we not be inexcusable to interrupt his salutary designs, by obstructing our own happiness, instead of labouring for it with all our might? God's designs towards us, are all merciful, but we often render them useless by a conduct which must necessarily make us unhappy. Let us be wiser in future, and make a better use of the different means of happiness with which God so abundantly furnishes us. And, as it is not possible to satisfy all our wishes in this world, let us have recourse to religion, which will amply compensate for any defects in nature, and will explain to us many things which appear obscure. Let us ever remember and gratefully celebrate the wisdom and power of our Creator, and duly appreciate the means which he has vouchsafed to employ in order to lead us to felicity.

JUNE XIII.

The Loadstone.

Of all minerals, the loadstone is the most singular in its properties: it is a ferruginous stone, of a dark grey colour, and has the property of attracting iron. This virtue, however, is not equally diffused through the whole stone, but resides chiefly in two of its points, which are called its poles. When this stone is suspended by a string, and unconfined, it constantly points one of its poles to the north, and the other to the south, if first put in motion, and then left to itself. This regular di-

rection, which only varies a little in some particular parts of the earth, has given the name of the northern pole to that which points to the north, and southern to that which points to the south. The two properties of attracting iron, and pointing towards the north, may be communicated to iron by rubbing it against the loadstone: and this discovery introduced the magnetic needle, so necessary to navigators in long voyages.—Hence we find, that many things which, at first sight, appear to be of little importance, may become exceeding useful to the world; and that, in general, the knowledge and study of the magnificent works of the creation are of infinite advantage to the human mind. These remarkable properties of the loadstone induced naturalists to examine it more closely, that they might be enabled to penetrate into the cause of such surprising effects, and also discover new properties in the stone. In the latter design they were more successful than in the former. They found that the magnet did not always, nor in all places, point exactly to the north; but that it sometimes inclined a little to the east, sometimes to the west, and that sometimes more and sometimes less. It was also observed, that its attractive powers were equally strong, though bodies were placed between the iron and the stone, which might be supposed to prevent this effect. Glass, fire, water, men, and animals, with every metal, except iron, give free passage to the magnetic effluvia. It was likewise discovered that the north pole of one loadstone attracts the south pole of the other, while the north pole repels the north, and the south pole the south. The attractive power is supposed to be as equally resident in the iron as in the loadstone, since the attraction seems to be mutual. To prove this by an easy experiment, we have only to suspend a loadstone at one end of the beam of a balance, and put an equal weight at the other end; when the balance is made perfectly even, place a piece of iron under it, and the loadstone will be immediately drawn down by the iron, and the other weight will fly up. If their situation be reversed, the loadstone will attract the iron in the same manner.

However singular these phenomena of the loadstone may appear, it is equally surprising that all the sagacity and all the efforts of philosophers have not been able

to discover the cause of these wonderful effects. The nature of the loadstone still continues to perplex the learned notwithstanding their most laborious researches. Let us not, therefore, be surprised that in *Religion*, which is infinitely elevated above all the objects of our senses, there should be found mysteries we are unable to explain in this finite state of existence, and the perfect knowledge of which is reserved for a future world. Is it surprising that some points in theology should be incomprehensible to us, when in natural things, which we see with our eyes, and feel with our hands, there are so many objects which oblige the most distinguished characters to acknowledge their ignorance, and the weakness of their understanding? There are, however, persons rash enough to doubt, and even to deny, whatever they cannot comprehend in religion. If this consequence were right, we might with much more reason assert, that the loadstone does not attract iron, or point to the north, and that all is false that is said of it, because we can neither explain nor comprehend it. When natural things are in question, we may say to such sceptics, "Come and see;" but the mysteries of religion are only to be seen with the eyes of the mind, and can never be perfectly comprehended till the soul shall arrive in the kingdom of light. Let us wait for this happy period; and, if we find any thing obscure and inexplicable in religion, or in nature, let us remember, that the imperfect state of our souls and bodies prevents us from searching to the bottom of them; let us also remember that a considerable part of the happiness of the world to come, will consist in having a more perfect knowledge of all that can contribute to complete our felicity, and to prove the glorious attributes of the Supreme Being. "There in the Fountain of light we shall have a clear and comprehensive view of every thing that appeared obscure or defective in this world; and our souls will be filled with gratitude and joy, on viewing all the different parts, connexions, relations, and universal harmony of the works of God."

JUNE XIV.

Cherries.

CHERRIES are a fruit, which, by their sweetness, mix-

ed with a pleasing acidity, quench the thirst, allay the fever of the blood in the heat of summer, and prevent the bad humours to which we are but too liable at this season. In the first place, they quench the thirst by their sharpness, which contracts the glands, cools the parched tongue, and moistens the dry palate. This method of quenching thirst, in hot weather, is preferable to drinking a large quantity of liquid, which only tends to increase our heat and perspiration. But, besides this property of quenching our thirst in the most pleasing manner, cherries have a cooling quality, which tempers the heat of the blood, and calms the animal spirits, whose too great impetuosity and agitation affect and weaken the nerves: thus the beneficial juice of cherries, by its acidity and astringent virtue, cools us delightfully in the great heats, prevents the blood from becoming too thin, thickens the fluids, and preserves them from putrefaction.

With what goodness has the Creator provided fruit adapted to every season! In this hot month we require cooling acid fruits, and he furnishes them in such abundance that the poor may enjoy them as well as the rich. Whenever, therefore, we see a cherry-tree laden with fruit, let us make this consolatory reflection:—How sad would be the fate of the labourer, who is obliged to earn his bread with the sweat of his brow, if, to refresh himself, he required those delicious beverages reserved for the sons of opulence, and could provide himself with no other! Merciful Father! thou forgettest not the poor; thou suppliest their wants; thou vouchsafest to refresh them with fruits within their reach; and the cherries are as grateful to them as the most expensive wines to the rich. What an abundance of acid and cooling fruits are produced in this season! Our gooseberries, currants, cucumbers, stone-fruit, and salads, are so many pleasing preservatives of health.

Whenever we behold the fruit-trees and enjoy their productions, let us gratefully bless the bounty of our Creator, and indulge those reflections which naturally arise out of the subject. The heavens, the earth, the elements, and every creature, combine to make us happy. Wherever we turn our eyes, we are surrounded with the blessings of our Heavenly Father. Animals, corn, vegetables, and fruit, in the valleys, on the moun-

tains, in the forests, and in the seas, all serve for our sustenance and enjoyment. The beneficent hand of the Most High is ever open to us. How great, indeed, are the blessings which God continually pours upon us! How many occasions have we daily to look up to Him with grateful hearts, and to bless him for all his mercies! Each time that we walk in the garden or in the field, each time that we enjoy the beauties and blessings of nature, let us think of him who is the source of every blessing and enjoyment.

JUNE XV.

Wisdom observable in the Construction of Animal Bodies.

THE formation of the animal body affords the most striking proof of Divine Wisdom: for, as some animals were designed to reside chiefly in the air, others on the earth, and others in the water, it was necessary that their construction should be conformable and adapted to their situation and different kinds of life.

The wisdom with which God has done this, cannot be sufficiently admired: every thing is so exactly disposed as each animal requires it, that if their construction had been like any other but their own, they would have suffered by it considerably, and could not have fulfilled their destination. Rapacious birds are provided with strong talons and sharp hooked beaks, that they may the more easily catch and securely hold their prey. Those which are to seek their food in marshy places, require a long slender bill and long legs; as it is necessary that those which live in water should have the lower part of the body very large, a long neck, membranes connecting the toes, to serve as a kind of oars; and a certain oiliness in their feathers, to enable them to glide along more smoothly. Insects that live on prey have mouths shaped like pincers; and those that suck their food are provided with a sting or trunk. Why have hares or rabbits such protuberant eyes, but in order to see and avoid the snares and dangers to which they are exposed? Why are the eyes of the mole so small and deeply sunk in the head, but that, living under ground, it does not require much sight, and because prominent eyes would incommode and hinder its burrowing under ground? Why is the crystalline humour in the eyes of

fish so round, but to compensate for the refraction of the rays of light in an aqueous medium; while animals which live in the air have their crystalline of a lenticular, or plano-convex form? Why have animals whose eyes are moveable only two, whilst those that cannot move theirs have many? Why is it that animals which seek their prey by night, have a large and brilliant pupil? And why does the eye of the hen answer the double purpose of telescope and microscope, but that she may seek the very smallest seeds in the earth or gravel, and discover at a distance those birds of prey which threaten to seize her young?

We are naturally struck with amazement when we consider the vast apparatus for the organs of animals in respect to their several motions. What a multitude of limbs! what suppleness! what flexibility! Some animals move slowly, others swiftly; some with two feet, others with more; some with both wings and feet, others without either. The slowness or swiftness of motion is always regulated according to the necessities of each animal: those that are well armed, and have courage, skill, and strength enough to defend themselves against their enemies, move more slowly than those that are defenceless. Who gave to serpents and other reptiles the power to contract and stretch out their bodies, to roll themselves up, and to dart out afterwards from one place to another to seize their prey? Who formed the fish in such a manner, that, by means of their air bladder, they can rise and fall in the water at pleasure? Who taught the snail to contract its body, and bring water into its little house, when it wishes to fall on the ground?

Contemplating the feathered tribes, we are compelled to exclaim, What art appears in the formation of every part, and particularly their wings! How well is their body constructed for flight: small and sharp before, and gradually increasing till it attains its proper bulk. This adapts it for cutting the air, and making itself a passage through that element. The feathers are all arranged with much art, and laid over each other in regular order, to facilitate the motion of the body, and, at the same time, to serve as a covering and defence from stormy and inclement weather. Though close and strongly connected together, they are capable of erect-

ing and extending themselves; of swelling out and forming a larger volume, as the necessities of the bird may require. The wings, which are the chief instruments of flight, are fixed in the most convenient place to preserve the equilibrium of the body in a fluid so subtile as the air; and every single feather is entitled to our admiration. The quill is stiff, and hollow towards the bottom; which makes it both light and strong: the beard of feathers is ranged regularly—broad on one side, narrow on the other; which is of wonderful use in the progressive motion of birds, as well as in the close and strong texture of the wings. What proportion do we see in the manner of placing the feathers! They are always so arranged as to agree exactly with the length and strength of each feather; and the large ones serve to support the smaller. In the bony part of the wings, what a multitude of joints are there, which open, shut, and move, according as it is necessary, either to extend the wings or draw them close to the body! What extraordinary strength in the pectoral muscles, that the bird may cut the air with more rapidity! What incomparable art in the formation of the tail, which seems as a rudder to direct the flight, and enable the bird to ascend and descend in the air, and also keeps the wings and body properly balanced! How admirably are the legs and feet appropriated to their different motions! In some birds the claws are large, and furnished with membranes that extend and contract, for the purpose of swimming: in others they are sharp, and bent down at the point, that they may walk the firmer, perch, seize and hold their prey. In some the legs are long, that they may walk into and rake their food out of the water and marshes: in others they are shorter; but always adapted to their mode of living, and their respective necessities.

Who can seriously reflect upon this subject without acknowledging the supreme intelligence of our Creator and Benefactor? Is it possible, that things so wonderful, so regular, so admirably proportioned, should be the effect of a blind chance? Could any one be persuaded, that such a multitude of veins, joints, and muscles, should be put in motion, in each animal, without design? and that all the parts, even the smallest, should be connected with each other, and perform their different offices with such perfect harmony and regularity?

Ought it not rather to lead us to think of the Creator of all things, whose wisdom and goodness have placed so many creatures exactly in the circumstances most suitable to them? Let us, then, make use of all these objects to glorify our Creator; and let us seek true wisdom, by endeavouring to become more intimately acquainted with this great Being, who has so gloriously manifested himself in all the creatures formed by his hand.

JUNE XVI.

The Dew.

The wise Ruler of the world, who continually watches over his children, and provides for all their wants, uses a variety of means to render the earth fruitful. Sometimes he effects this by inundations. It is true, that, when these lay countries waste, the farmer, who only thinks of the present, gives way to ungrateful murmurs; but, in the end, if their happy consequences for the general good be properly considered, it must be allowed they are very beneficial. Sometimes it is by a river, which, like the Egyptian Nile, has the singular property of overflowing its banks at certain periods, to water a country where showers never fall to irrigate the parched fields. Sometimes it is by rains, which fall more or less frequently, in order to cool the air, and water the thirsty ground. But these means are neither sufficiently constant nor abundant; the most usual, certain, and universal, though, perhaps, the least regarded, is the dew. This inestimable gift of Heaven, which, even in years of the greatest drought, supports and preserves the plants from perishing, consists of those pure and brilliant drops which are seen in such profusion, morning and evening, on the leaves of trees and plants.

The dew does not fall from above, as was formerly imagined: it does not descend from the highest parts of our atmosphere; nor is it an exhalation from the stars, as superstition had supposed. This pretended celestial origin has probably given rise to the folly of some alchymists, who hoped to convert dew into gold. It is now generally allowed, that dew is nothing more than a vapour, which, during the warmth of day, exhales from the earth and vegetable productions, and, con-

densed by the coldness of the night, falls in drops. To be convinced of this, we have only to cover a plant with a bell glass, and we shall observe a greater quantity of dew-drops collected upon its leaves than upon those which have been exposed to the open air. This certainly would not be the case, if the dew fell from above, or if it did not rise from the ground.

Nothing is easier than to account for the formation of dew; for no one can be ignorant that the rays of the sun, and the heat which is diffused upon the earth, continually detach from all bodies a multitude of small particles; some of which rise into the atmosphere, and the rest collect in the form of drops of water. This account of the dew explains how it happens that it is sometimes hurtful, and sometimes not so. Its nature evidently depends on the quality of the vapours of which it is composed. The wind carries off the light exhalations as soon as they are formed, and prevents them from falling in drops. This is the reason that there is most dew when the air is very calm. By this wise arrangement of the Creator, plants can vegetate and grow even in countries where there is no rain; for the soil in those places being sandy, porous, and very moist underneath, the heat draws out a great quantity of dew which encompasses the plants and supplies the place of rain.

These different methods which Providence uses to moisten and fertilize the earth, ought to remind us of those which Divine Grace employs to improve the barren heart of man, and to make it fertile in good works. Chastisement more or less severe, blessings of every kind, exhortations, warnings given us from the example of others, and a thousand other means, are made use of by our gracious God, to lead us to himself, to sanctify us, and to induce us to bring forth the fruits of righteousness. Sometimes, in the natural world, a violent storm falls from the clouds, deluges the fields, causes rivers and brooks to overflow their banks, and sweeps every thing before it. At other times God calls the soft dew from the earth, and, in a manner, imperceptibly grants the wishes of the farmer for rain. Thus also in the economy of grace he makes use of different means to accomplish the merciful end he proposes. To many obdurate hearts he speaks in thunder and lightning, as formerly from the top of Sinai; while he calls to o-

thers with a voice milder than the evening zephyr, and refreshes their souls with the beneficent dew of his grace.

Let this conduct of our heavenly Father serve as a model to us. Let us employ all sorts of means to reclaim our fellow-creatures, but let us particularly endeavour, from the example of God, to gain him rather by kindness than by punishment. Let us imitate the beneficence of the Lord. We see how he refreshes the parched earth by the dew, and gives new life to the vegetable world. Let us then consider how many of our fellow-creatures are in distress, and languishing for want of assistance. Let them not implore our aid in vain. But let us endeavour to revive their hearts by kindness, and to pour as many blessings on our fellow-creatures as the dew sheds upon the tender plants.

JUNE XVII.

Life and Labours of the Bee.

In the fine days of the present season, in this time of cheerfulness and joy, every thing is in motion; every thing throughout the animal world is full of life and activity; but there are no creatures so active as the little republic of bees. At least it is certain, that of all the insects around us, there are none we can better learn to be acquainted with, or which can afford a more pleasing and profitable scene.

Bees generally dwell, in great numbers, in hollow trees or cavities, or in a sort of basket called a *hive*, which men have formed to collect them together. In their excursions from home, they disperse themselves over the country, and, by means of their trunk, or proboscis, collect honey and wax from the juices and stamina of flowers. These they bring to their dwelling, which they fill from top to bottom with hexagonal cells, for the different purposes of accommodating themselves, receiving their eggs, lodging their young, and stowing the honey which is to support them during the winter.

Among these bees, which form but one numerous family, there is one larger than the rest, which is a female, and therefore called their queen: to her alone all the young bees born in a hive owe their birth. From the eggs she deposits in the cells, worms are produced,

which the working bees feed for some time with their trunks. Afterwards these worms remain about fifteen days in their cells, which are closed with a covering of wax, without any motion, and apparently dead. In this quiescent state they are called *nymphæ*: but when the proper time is arrived, they open their cells, and come out in the form of young bees. Besides the queen, there are in each hive two sorts of bees—the drone and the working bee: the drones are males; they impregnate the queen, and serve as her guard. Bees have on their heads two horns or antennæ, which guard their eyes, and warn them of dangers: they have fangs or claws which they use in their work; and a trunk, or hollow tube, which they can draw in and out of its case at pleasure. This instrument, supple and moveable in every way, reaches to the very bottom of the cup of the flowers where they gather their honey, and passes through the case into the honey-bag placed within their bodies, whence the honey is afterwards poured into the cells of the storehouse. Bees have six feet: with the two first, and their fangs, they form the wax or farina of the flowers into little balls; and with their middle feet they put them into a hollow, shaped like a spoon, which they have in their hind feet; which are also furnished with hair, in order to retain the wax, and prevent it from falling when they fly. Thus laden, they return to their cell, without losing their way, though they are sometimes several miles from it. When they arrive, they find other bees waiting to assist them in unloading their booty; and then they all work in common, and employ their provisions for the general use of the hive. With the wax they close up the crevices of their dwellings, to prevent any other animals from intruding; and leave only such openings as are requisite for their own convenience. The queen and the working bees have, at the extremity of the body, a sting, enclosed in a case, which they make use of to wound or kill their enemies: but the wound they inflict is generally fatal to themselves, when the sting remains behind.

Every thing in these little animals is calculated to excite our admiration; the formation of their limbs, so regular and so well adapted to their kind of life; the care they take of their young; the art with which their cells are built; their activity, their industry, and intel-

ligence. Let us never pass a beehive with indifference. Let us admire its industrious inhabitants, and this admiration may lead us to more sublime thoughts. If we wish to reflect on our Creator, we shall find him here. This interesting scene will lead us to him; and we shall adore his wisdom, his power, and his goodness, in the production of these little creatures.

JUNE XVIII.

The External Parts of Plants.

In order to form a just idea of the inimitable art which appears in the vegetable kingdom, we must proceed by degrees. Our understandings are too limited to see the whole together, or to acquire a perfect knowledge of it. We must therefore content ourselves with some observations, and pass from visible to invisible things; from simple and individual objects to those which are more complicated and general. Let us begin, then, by considering the external parts of plants, and first survey their roots. These are so constructed, that, by means of the principal root, with the fibres, and little roots which grow out of it, the plant is fastened to the ground. The pores of the root serve to receive the watery and nutritive juices which the earth contains. Out of the root grows the stem, to which the plant partly owes its strength and beauty. Its form is varied according to the nature of the plant. Sometimes the stem is formed like a pipe, strengthened by different knots curiously arranged: at other times the stalk is so weak, that it requires a support, round which it may twine and fasten itself by means of little hooks. Sometimes, also, the stem rises majestically, like a strong pillar: becomes the ornament of the forest, and seems to brave the stormy wind.

The branches extend themselves like the arms of the human body, and are very regularly distributed. They spread and divide themselves into boughs, which are placed collaterally, and in the same order as the principal branches. The buds which proceed from the branches, are nothing but little plants, which, being put into the ground, take root, and become exactly similar to the tree on which they first grew.

The leaves, those lovely, pleasing ornaments of plants,

are regularly disposed round the stalks and branches; and such is their variety in structure, figure, size, and beauty, that amongst thousands we can scarcely find two which exactly resemble each other. Leaves are either simple or compound, hairy or fleshy, smooth or curled and indented.

The blossoms of trees, which constitute one of nature's most fascinating charms, are not less diversified than the leaves. Some are plain, and have but one flower, others have several: here we see a vase opening gracefully; there we see the figures of helmets, bells, stars, suns, or butterflies with expanded wings. Some leaves or petals are placed carelessly round the plant; others form circles, bouquets, or garlands. From the centre of the flower rises a little pillar, and sometimes several, which are hollow within, and round or pointed at the top: these are called *pistils*, and they are generally surrounded by lesser pillars, called *stamina*, which support the *anthers* containing a very fine powder. But who can describe the delicate texture of many of the blossoms; the sweetness of their perfume; the liveliness, variety, and splendor of their colours?

To the blossoms succeed fruit and seeds, which afford an agreeable source of nourishment to men and animals, and also repair the waste of the seasons; as they enclose, under one or several coats, the germs of future plants.—The external form of fruits and seeds varies as much as that of the leaves or blossoms, and there is scarcely any form that is not distinguishable in one or other of them. All these parts of plants have their proper use and design: let the smallest part of them be taken away, and the plant will loose some of its perfection, beauty, growth, or increase. As extraordinary as it may appear, it is certainly true, that all those parts, without one single exception, are more or less necessary to the perfection of the whole. To illustrate this by experiment: take the leaves from a tree, and it will soon wither and perish. It is the same with all other plants: there is nothing superfluous amongst them; nothing that has not its use; nothing that does not evidently tend to the perfection of the whole.

But in discovering this connexion, this harmony, and wonderful arrangement of the vegetable kingdom; in seeing that the whole is beautiful, and regulated by ge-

neral laws, though differently applied; shall we not conclude that the Author of all those beauties must necessarily be possessed of infinite wisdom? This consequence is as natural as that we draw, when, on hearing a person speak, we conclude that he must be near us. Let us therefore raise our souls to the Creator of all things! We shall every where find him. It is for this purpose that he has formed the plants so magnificently, and thus displays to us their beauty and utility. Let the Divine Wisdom be ever present to us! It will appear in the smallest blade of grass, if we take the trouble to examine it closely. Such reflections will make us more sensible of the pleasures of summer, and render it still more interesting in our eyes. The more we accustom ourselves to reflect on the wisdom of God, the more satisfaction we shall have in contemplating nature: at each flower we behold, we shall cry out with transport.—How great is our Creator! how admirable is his wisdom!

JUNE XIX.

Hymn of Thanksgiving for the Works of the Creation.

To thee, O Lord, from whom proceedeth every blessing, and who dispensest them so bountifully: to thee belong glory, honour, and thanksgiving. Thou hearest the cries of the young raven, and takest pleasure in the song of the lark: vouchsafe to listen also to my voice, and accept the just tribute of my humble praise.

The least of the creatures formed by thy hand proclaims thy wisdom. Traces of thy goodness and power are seen from one end of the year to the other, and are continually renewing. Each blade of grass declares the greatness of God, and our own nothingness.

With parental tenderness thou providest for our necessities, and givest to men and animals their proper food. From day to day thy blessings continually succeed each other: and even the wicked man feels the effect of thy goodness. O God! who is like unto thee? The earth is full of thy goodness and wisdom! Vouchsafe to teach me, O Lord! how to praise thee worthily. Incline my heart to love thee: and let me hereafter live only for him who is continually loading me with benefits.

It is in thy name, and in the hope of thy blessing, that the husbandman sows his corn. It is thou who makest the seed fruitful. This earth, which for our sins had a curse laid upon it, is blessed again by its Creator, and bringeth forth an abundance of fruit. Thou waterest the furrows of the fields. Thou clothest the meadows, the valleys, and the plains, with flowers, trees, and herbage. Thou orderest the cool and refreshing dew to moisten our gardens and fields, and to diffuse upon them fertility and abundance.

Dry and thirsty lands are watered by thy gentle showers; while damp and cold places are warmed by the rays of thy sun. By thy wisdom the times and the seasons are ordered in a manner the most beneficial to mankind; and, in the midst of all the vicissitudes of heat and cold, rain and drought, we still behold ample supplies of food spring up, grow, and ripen. Thou coverest our fields with luxuriant harvests, and the wings of the wind support the waving corn. Thou adornest the tops of barren rocks with grapes. Thou dressest our pastures with clover; and, at thy command, fountains and rivulets gush forth to refresh the thirsty animals.

Thou causest the tree to take root and prosper. Thou makest the quickening sap to circulate through its trunk, and givest it force to branch out into leaves and blossoms; while the abundance of fruit, under which the boughs bend, proves the pleasure thou hast in doing good.

O let us glorify our Creator, and Benefactor! Let us bless his holy name! Let us praise his mercies with transport! Great is the Lord our God! All his works are holy and wonderful! Let us exalt his almighty name! The Lord is good! It becometh the righteous to publish his praise for ever and ever.

JUNE XX.

Caterpillars.

Though these insects are so disagreeable to the lovers of gardens, and so disgusting to many delicate people, they nevertheless deserve our attention. Caterpillars generally live on our trees; and we have such an aversion to them, that, wherever we meet with them, we

endeavour to destroy them. This is the reason we do not deign to honour them with a look, and still less to examine them minutely; and yet there is no doubt but these insects may very agreeably amuse an attentive observer of nature. Let us here try to prove it. Perhaps, by raising the curiosity of those who have hitherto neglected them, they may be induced not to trample them under foot, without, at least, first observing their wonderful formation, and thence taking occasion to look up to the Creator.

The species of caterpillars already known amount to more than three hundred, and there are new ones daily discovering. Their shape, colour, form, propensities, and modes of life, all differ in some respects; but they have in common an annular structure, being composed of many rings, which, by dilating and contracting, draw the animal along wherever it goes. Nature has given them two sorts of feet, which have each their particular use. The six fore feet are a sort of hooks, which they use in taking a fast hold, and clinging to any thing. The soles of the hinder feet are broad, and armed with little pointed nails. With the hooks they draw to them the leaves, the grass, and whatever they want for food, and they fix the fore part of their body with them while they are drawing up the hinder rings. The hind feet they use to keep themselves firm, and to grasp whatever serves them as a resting place. When they are on a branch, or a leaf, they can seize on food at some distance; for, by hooking themselves on with the hind feet, they stand up, and raise the fore part of their body, move it about, and poise it in the air on every side; get considerably upon the leaf, reach their food, and take it with their claws. However adapted the body of the caterpillar is to its several wants, it is remarkable that its state is but transient, that the limbs last but a certain time, and that this creeping worm becomes a chrysalis, without feet or motion, till it is metamorphosed into a creature classing with the inhabitants of the air. Were it for this reason only, the caterpillars would be worthy our attention.

Towards the end of summer, and often sooner, after having satiated themselves with verdure, and after having changed their coat several times, these animals cease to eat, and begin to build a house, in which they may leave the caterpillar state, and transform themselves in-

to butterflies: this place of shelter, called the chrysalis, is of an oval form, marked toward the extremity with rings, which gradually diminish till they terminate in a point. The chrysalis is full of a sort of thick milk, which serves for food to the butterfly till it comes out. When it is entirely formed, and its parts arrived at consistency, and when a gentle warmth invites it to quit its prison, it makes itself a passage through the largest end, which is, at the same time, the thinnest part of the chrysalis. Its head, which was always turned toward this end, first disengages itself; then, the antennæ, or horns, lengthen, the feet and wings expand, and the insect rises into the air, retaining nothing of its former shape: for the caterpillar which was transformed into a chrysalis, and the chrysalis which became a butterfly, are very different creatures. The one is rough, hairy, and sometimes of a hideous aspect; the other is decorated with the most brilliant colours: the one is contented with gross nourishment, the other sips the nectareous sweets of the finest flowers, and roams at large over the landscape, which it serves to embellish. Some persons may still think they have a right to ask, To what *purpose*, after all, are these caterpillars? would it not be better to be entirely free from them? No, certainly. On the contrary, the world would be less perfect than it is, if there were no caterpillars in it. Take away these insects, and you deprive the birds of a considerable part of their subsistence. As the birds were to feed on caterpillars, it was just that the Creator should ordain for their food the leaves and plants to which they have an equal right with ourselves. It is true, that the voracity of these animals makes them sometimes troublesome to mankind; but this is an evil which the Creator permits with much wisdom: for the mischief the caterpillars sometimes occasion, may serve to humble us, and make us recollect the uncertainty of all earthly possessions. And even supposing we could not penetrate into God's reasons for forming such creatures, we should not therefore have a right to deny their utility. On the contrary, we should thence take occasion to acknowledge our own ignorance, and rely implicitly on the wisdom of our Creator.

JUNE XXI.

The Beginning of Summer.

This day summer commences. Many of us have often seen the changes occasioned by this day throughout all nature: but do we know why the sun remains so long above the horizon? why this is the longest day of the year? and why, in reckoning from this time to the end of autumn, we perceive the heat and length of the days diminish in equal proportion? All these changes are occasioned by the annual revolution of our globe round the sun. When that luminary enters into the tropic of Cancer, the earth is so situated, that all its northern side is turned towards the sun; because the Creator has inclined the axis of our globe towards the north, and it invariably preserves that direction. On this direction, and on the constant parallelism of the axis, depend, properly speaking, the vicissitudes of the seasons.

Let us here reflect a moment on the goodness and wisdom of God, in thus inclining the axis of the earth. If it had been in a perpendicular direction, our globe would have been a very melancholy habitation, both for plants and animals. Neither the increase nor decrease of the days, nor any difference of seasons, could possibly take place. How much then to be pitied would the inhabitants of the North be! The air they must respire would be always as keen as that of March, and, with the exception of a little moss and grass, the soil would yield no vegetable productions. In a word, the greater part of the two hemispheres would be a frightful desert, inhabited only by a few insects.

In our climate * nature has at this time almost ended her annual work. She has already lost some of her variety. Nothing can be more green than the vines, the orchards, and the forests; but the shades of colour are not so pleasing as formerly. The meadows begin to whiten, and their flowers are mowed down. The corn insensibly grows yellow, and the number of flowers diminishes. Lately, the variety and brilliancy of these, with the diversified notes of the birds, had all the charms of novelty, and afforded us the most pleasing sensations;

* Germany.

but now, the nearer we approach to autumn, the more these enjoyments diminish. The nightingale is silent, and the great heat makes it inconvenient to walk.

May we not here discover an emblem of human life? Are not the pleasures we enjoy equally transient? Even the most innocent of them, such as nature in the beauty of spring presents to us, are liable to change, and give place to other objects. What we at present observe in the summer of nature, we may observe in the summer of life. When we have attained our fortieth year, which is the beginning of a riper age, the world loses part of its charms, such as delighted us in our youth; and, when we approach the autumn of life, we often become a prey to cares, and are less calm, less serene, and less joyous, than we formerly were. We shall then observe, that strength of body insensibly diminishes by age; and, finally, the days will come in which we shall say, "I have no pleasure in them."

But with what lively joy may I lift up my soul to thee, O God! who directest the seasons, who art the Father of all beings, and the fountain of felicity. I again acknowledge thy wisdom and goodness in the regular succession of the seasons. Grant that I may never forget thee, in the enjoyment of the numerous pleasures which summer sheds over all nature; thou who disposest all things, and whose glory each season proclaims. May I be so much the more inclined to pious gratitude and adoration, as this may possibly be the last summer I shall live to see! Alas! how many of my friends and acquaintance, who were last summer enjoying with me the beauty of this world, have been carried off by death, before the present summer had begun! Perhaps I shall soon be united to them. Possibly it is for the last time that I have contemplated, in this world, the charms of nature. May I, therefore, live this summer, as if it were my last. May I glorify thee, O God! with as much ardour as if I were sure of never more having it in my power to acquit myself of this duty. May I act in such a manner as never to regret having so often seen the return of the seasons. Vouchsafe, O Lord! by thy grace, to confirm me in these resolutions; and, as thou hast inspired them, give me strength also to put them in execution.

JUNE XXII.

The Nightingale.

THE nightingale is a musician of the first rank amongst the inhabitants of the air. When all the birds, which, during day, entertained us with their notes, cease to be heard, the voice of the nightingale is raised to animate the woods and groves. When we listen to the thrilling music of her notes, we are apt to conclude that the bird must be large, that her throat must have uncommon strength; and the inimitable charms of her melodious accents make us presume that in beauty she surpasses all other volatiles. But in vain do we seek these perfections in the nightingale: she is a bird of mean appearance, whose colour, form, and whole exterior, have nothing majestic or attractive. Nature, however, has amply compensated for this plainness, by giving her a voice irresistibly charming. Listen to her long quivering notes. What variety, sweetness, and brilliancy! When she begins her song, she seems to study and compose before-hand the melodious accents she wishes to pour forth. She begins softly; then the notes swell gradually, till they run with the rapidity of a torrent. She proceeds from serious to gay; from simple notes to the wildest warblings; from the lightest turns and shakes to languishing sighs; and has throughout the whole, the art of pleasing the ear.

This bird may give rise to many useful and edifying reflections. For example, we may learn from her this truth, that homeliness of body is sometimes united with very estimable qualities, and does not exclude beauty from the soul. How unjust then are those persons who, only attaching themselves to the features of the face, and to exterior qualities, neither praise nor blame any thing but what strikes their senses, and despise those who have bodily defects. Let us learn to judge with more equity. Any man, though deprived of the advantages of figure and fortune, who proves himself by his conduct to have the soul of a sage or a saint, is by much the more worthy of our esteem. The perfections of the soul alone give true merit to man, and render him worthy of admiration; the rest can only seduce those who do not know the value of wisdom and virtue. Have

we not often known persons, neither distinguished by rank nor exterior qualities, who have rendered the greatest services to church and state? Crooked and deformed people have often shown more greatness of soul than those who possessed the most beautiful and majestic form. This is a lesson not to trust to appearances. Those we despise may often prove to be superior to ourselves.

When we hear the skilful harmony of the nightingale, should it not naturally lead us to the Creator, from whom she has received this talent? What wisdom must there be in the formation of this bird, to make it capable of uttering such sounds! Lungs so delicate as those of the nightingale, the motions of which are so violent, must be easily wounded, if they had not the singular advantage of being fastened to the back-bone by a number of strong fibres. The orifice of the windpipe is very large, and this certainly contributes to the variety of those sounds, which, in charming the ear, fill the soul with a sweet and pious delight. Is it possible not to trace a Divine Wisdom and Providence in this? and will not even the song of the nightingale lead us to glorify the Author of all nature? Lovely songstress! I will not leave thee till I have learned from thee the art of praising my Creator and thine. Pour, with thy song, gratitude and joy into the hearts of the many insensible mortals, who in these cheerful days contemplate with indifference the beauties of the creation.

JUNE XXIII.

The Pleasures which Summer affords to our Senses.

SUMMER has inexpressible charms, and gives us daily proofs of the infinite beneficence of our Creator. It is the happy season in which God pours out the treasures of his blessings in the greatest abundance on every living creature. Nature, after having revived us with the pleasures of spring, is employed, all the summer, in providing for us every thing that may gratify our senses, render our subsistence easy, supply our wants, and awaken in our hearts just sentiments of gratitude.

By virtue of the secret laws of nature, an innumerable quantity of fruits grow before our eyes in the fields and gardens: fruits which, after having pleased the sight,

may be gathered and preserved for our food. The flowers afford the most agreeable diversity to our senses; we admire their rich dress, and the inexhaustible fertility of nature in the multiplicity of their species. What variety and beauty also in the plants, from the humble moss to the stately oak! Let us climb the highest mountain, seek the cool shade of the woods, or descend into the valley, we shall every where find new beauties. A multitude of objects strike our eyes at once, all different from each other, but, each possessing in itself sufficient charms to fix our attention. There we see innumerable flowers; here living creatures of different kinds. If we look upward, our eyes are delighted with the celestial azure; if we look downward, they are refreshed by the beautiful verdure with which the earth is clothed. Our ears are charmed with the cheerful notes of the winged songsters; the variety and simplicity of their melody fill the soul with the sweetest sensations. The murmuring of the brooks, and the silver waves of a fine flowing river, also please the ear and eye. To indulge our taste, the strawberries and other delicious fruits ripen; which, independently of the pleasure they afford, tend to cool the blood. Our barns and granaries are filled with the new productions of the fields and gardens, which afford us the most wholesome and agreeable food. Our smell is regaled with the sweet perfumes that ascend on every side. In a word, a thousand pleasing objects affect the senses, and raise our sensibility. Numerous flocks feed on the profusion of bountiful nature, to procure us pleasant and wholesome milk, and nourishing meats. Abundant rains moisten the ground, and open to us new sources of blessings. Tufted trees and groves afford us a delightful shade. All that we see and hear, all that taste or smell can convey, increases our pleasures, and contributes to our happiness.

But the creation is a scene still greater and more enchanting for the mind than for the senses. Where the senses cannot reach, the mind discovers beauty, harmony, variety, and new pleasures. In all creatures we discover traces of their *Adorable Author*. If we raise our eyes to heaven, the sun, the moon, and every star, combine to declare *his* creative power. If we smell the charming odour of the flowers, that sensation reminds

us, that *he* has formed them so as to exhale those rich perfumes. If we taste a delicious fruit, we see *his* goodness manifested in the means of nourishment. All that we perceive through the medium of our senses leads us to God, and consequently ennobles all our sensations. While admiring the beauties of nature we rise imperceptibly towards the Centre of Perfection. While our attention seems engrossed by earthly objects, we insensibly soar toward heaven, and are lost in the immensity of eternity.

O celestial joy! is there any pleasure for which I would exchange thee, or that equals thee in value? O how I wish to devote myself to these reflections, that the gratification of my senses may furnish me with an intellectual feast! But though I were permitted to behold a thousand revolving summers, I should still discover *new* objects of admiration; and this affords a convincing proof of the reality of that future existence for which I hope. There my senses shall be more exquisite, and my comprehension more perfect than here below. Sublime beauties shall then present themselves to my view, and my joy shall be more ecstatic than I can now conceive.

JUNE XXIV.

A Sketch of the Inward Parts of the Human Body.

THE more difficult it is to acquire a competent knowledge of the internal parts of the human body, the more necessary it is to profit by the information with which we are furnished by skilful anatomists.—With the view of facilitating the knowledge of those parts, I shall now give a short description of them.

The construction of the *heart*, which is placed near the middle of the breast, and is the moving principle of the whole machine, is worthy of admiration. This consists of musculous fibres curiously interwoven. Two cavities, separated from each other by a partition, and which are called ventricles, are formed in the inside of this organ. The *lungs* are of a spongy substance, which, like bellows, extend and contract, in order to draw in and expel the air. They swell out on both sides, and fill almost the whole space of the breast, to refresh it with the air drawn in, and at the same time to prevent

the blood from too much attenuation. The breast is lined with a fine membrane, called the *pleura*. Under the lungs is placed the *stomach*, which receives and digests the food, and is shaped like a purse. On the right side is the *liver*, which covers one side of the stomach, and, by its warmth, assists digestion. It separates the bile from the blood, which collects in a particular vesicle called the *gall bladder*, and thence descends into the bowels, which it stimulates to action. Opposite to the liver is the *spleen*, which is a soft bag, and easily stretched. The blood is conveyed into it by arteries, and flows out of it through the veins. Behind the liver and spleen are the *kidneys*. Of these there are two—one to the right, the other to the left. The use of them is to separate from the mass of blood the humours which overflow into the bladder. Under these parts are placed the *intestines*, joined to the mesentery. They complete the separation of the digested food, and serve to expel the grosser parts from the body. The *mesentery* is a great membrane with a variety of foldings, to which the intestines are attached. Upon this there are innumerable vessels, as fine as hairs, which are termed the *lacteals*, because they contain a juice, extracted from the food, similar to milk. In the middle of the mesentery is a large gland, where the lacteal veins meet as in a centre. A skin, full of folds, glands, and muscles, covers all the intestines. That part of the body called the abdomen, which begins at the stomach, is separated from the breast by the *midriff*. It has several openings to let the vessels pass which are to descend to the lower parts. The liver and spleen are fastened to it; and the shaking of it not only occasions laughter, but serves also to discharge the spleen from the humours which incommode it.

These are the principal parts of the breast and belly; independent of which, there are several others which communicate with them. At the beginning of the neck are the *œsophagus* or gullet, and the *windpipe*. The œsophagus is the channel through which the food passes to the stomach. Through the windpipe the air penetrates to the lungs. Whilst the lungs are sending back the air through this channel, the voice forms itself; at the same time the breast throws off the superfluous humours. At the entrance of the windpipe there is a little valve, which

opens to give passage to whatever is to go out through this tube. The lower orifice of the stomach is provided with a similar valve, which opens when the food presses upon it, and then closes upon it, to prevent its rising up again. In the upper part of the head is placed the *brain*, which is capable of receiving impressions from external objects. Its whole mass is covered with two thin transparent membranes; one of which, called *pia mater*, is the first envelope: the second, called *dura mater*, is interwoven with arteries and veins.

Independent of these parts, each of which has its settled place, there are others dispersed throughout the whole body, such as the bones, arteries, veins, lymphatic vessels, and nerves. The *bones* united together by joints, partly serve to support and give the power of motion to the body, and partly to preserve and guard its nobler parts. The *arteries* and *veins* are diffused throughout the body, in order to nourish it with the blood which circulates in them. And there are also several *lymphatic vessels*, which generally join to certain glands, and receive a transparent yellow liquor, which they afterwards distribute throughout the body. The *nerves*, of which ten principal pair are reckoned, are little fibres springing from the brain, and thence diffusing over the whole body, to the very extremities of it. They contain a kind of medullary substance like that of the brain, and are the organs of sense and motion to the whole machine. All these parts are perforated with holes, that the light and subtile matter, and whatever is superfluous in the body, may evaporate. These holes, which, by their extreme minuteness, are invisible to the naked eye, are called *pores*.

The same wisdom so conspicuous in the solid parts of the body, is equally so in the fluid. The blood, chyle, lymph, marrow, bile, nervous juice, and the different sorts of viscous and gelatinous humours, supplied by innumerable glands; their several properties, designs, and effects; the manner in which they are prepared, filtered, and separated from each other; their circulation and reparation; all these prove the most astonishing art, and the most profound wisdom.

Let us now recapitulate what has been said on the interior construction of the human body. The *bones*, by their joints and solidity, form the foundation of this fine

machine: the *ligaments* are strings which unite the parts together: the *muscles* are fleshy substances, which act as elastic springs: the *nerves*, which are dispersed over the whole body, connect all the parts together: the *arteries* and *veins*, like rivulets, convey life and health throughout: the *heart*, placed in the centre, is the focus, where the blood collects, or the acting power, by means of which it circulates and is preserved: the *lungs*, by means of another power, draw in the external air, and expel hurtful vapours: the *stomach* and *intestines* are the magazines where every thing that is required for the daily supply is prepared: the *brain*, that seat of the soul, is formed in a manner suitable to the dignity of its inhabitant: the *senses*, which are the soul's ministers, warn it of all that is necessary either for its pleasure or use.

Adorable Creator! with what wonderful art hast thou formed us! Though the heavens did not exist to proclaim thy glory; though there were no created being upon earth but myself, my own body might suffice to convince me that thou art a God of unlimited power and infinite goodness. May I henceforth pay more, and more becoming attention to this interesting subject; and may it invariably lead me to praise and adore the Divine Author of my existence!

JUNE XXV.

Electric Fluid.

From the many experiments made in our time, no person now disputes the existence of the electric fluid, the singular effects of which have fixed the attention of all Europe for more than half a century. It appears that this fluid is equally diffused through all bodies; but, like the air, it is imperceptible to our senses till it is agitated. It is also necessary, that, when the balance is interrupted by any cause whatever, it should be restored, before we can sensibly perceive the electric fluid. Here it is necessary to distinguish two kinds of electric bodies: those in which the electric fluid may be excited by means of friction, and those which receive their electric power by communication with the former. Those of the first class are chiefly glass, pitch, rosin, sealing wax, silk, hair, &c. All other bodies, but particularly

water and metals, belong to the second. Bodies of the first kind are capable of preserving the electric matter collected in them: those of the second, on the contrary, lose it as soon as they receive it.

Machines have been invented, in which, by means of a large wheel, a rapid motion is given to a glass globe, or cylinder, which, in turning round, rubs against the hand, or a cushion. By this friction, the globe preserves its electric force, which may be extended at pleasure by means of iron bars or chains, which communicate with the glass globe. If while the machine is working we put our hand on one of these bars, we receive a shock; and if the room be darkened, a luminous spark will be perceived. If several persons form a circle, holding each other by the hand, they will at the same moment receive the electric stroke, which may be made more or less violent.

The electric fluid may be accumulated to such a degree, as to kill, by its discharge, not only sparrows and other little birds, but also hens, geese, ducks, and even sheep. This experiment is performed by means of large glass bottles filled with water, and fastened together with metal chains, which fasten them also to the glass globe put in a state of friction, as before described. The water conveys a great quantity of electrical matter into the inside of the bottles, and, at the same time their outside surface loses an equal quantity. A vivid flash, a great explosion, a violent commotion, the combustible matter taking fire, and the death of the animals, are the consequences of this experiment. There are others, also, which are common to all these sorts of experiments, such as a sulphureous smell, an agitation of the air, and the electric matter acquiring a new property. It has been observed, that some experiments failed, because the iron bars which were to serve as electric conductors, were too angular and pointed; and, it was suspected that the electricity lost its force by the points. This conjecture was confirmed when, on putting the hand near the angles and points, a copious stream of the electric fluid was perceived to issue from them. It was then supposed that those points which ejected electrical matter, might also serve to attract it, and many experiments have proved the truth of this conclusion.

If any one should think these observations of no im-

portance, let him consider that we may learn more and more the use of this extraordinary phenomenon of nature, from which a twofold use has already been drawn. Physicians have joined electricity to their art; and there are examples of its having cured paralytic limbs. And naturalists have discovered a great analogy between lightning and electric fire, which has given rise to new opinions concerning the formation of thunder, and has changed the former ideas on that subject. Thus, from time to time we receive new solutions of the mysteries contained in the great works of our Creator. How limited are the views of man! and how little attention does he pay to those important things which are placed before his eyes, since the phenomena just mentioned were for many centuries unknown; and, even now, how little are we acquainted with nature! and how much have we yet to learn!

JUNE XXVI.

The Manner in which Thunder is formed.

FORMERLY, and even at the beginning of the eighteenth century, it was supposed that thunder proceeded from an inflammation of salts, sulphureous matter, and other substances, which are found in the air. It was imagined that there was the greatest resemblance between the effect of fire-arms and that of thunder and lightning. But all the explanations by which men endeavoured to establish this system, were not sufficient to remove the difficulties which opposed it, or to account for the supposed effects. But since the phenomena produced by electric fire have been observed with due attention, we are authorised to assign a very different cause for thunder. The perfect resemblance between that and electricity, has convinced naturalists that they are precisely the same, and that electricity is in our hands what thunder is in the hands of nature: the latter executes at large, what we imitate in miniature. It will not be difficult to demonstrate this, even to persons who are unacquainted with natural philosophy, if they will only take the trouble to compare the effects of thunder with those of electric fire.

The effects of thunder are discovered by a loud noise heard at a distance, and by conflagration. Buildings

exposed to it are often consumed by flames. Men struck by it become black, and appear scorched, though sometimes there is no trace of fire, the violence of the stroke having killed them; their clothes are torn to rags, they are thrown to some distance from the place in which they were, and the part of the body which was struck is pierced with holes. Sometimes large stones are broken by the lightning, and its ravages are discoverable on the ground where it falls. Electricity produces the same effects, but in a less degree. When by means of water, its force is increased, the electric flash is followed by a strong commotion; very compact bodies are pierced with holes; birds and other small animals are killed by it; and every flash is accompanied with a loud noise. The stream of fire also that passes from the points of electrified bodies with a hissing noise, is one of the phenomena observable in lightning; and with respect to velocity, there is still greater resemblance between thunder and electricity. If during a storm, a sword or chain be hung up in the air by silken strings, it becomes electrified; and on the approach of the finger there will come out of it sparks of fire, more or less, in proportion to the degree of storm, or our distance from it: in a word, all the effects of electricity appear during a thunder-storm. After such experiments, it can no longer be doubted, that the air is highly electrified when there is a storm, and that thunder and lightning are merely the effects of a violent electrical fire.

Thus all that appeared wonderful and tremendous in these phenomena, disappear by degrees, as we become better acquainted with the laws of nature. Consequently every one should have a general knowledge, at least, of the first principles of natural history. Terror and superstition, which often mix with our observation of nature, would soon be at an end, if we either resolved to reflect upon it ourselves with more attention, or to consult others who are well informed upon the subject.—Let us make use of the light we have acquired to banish the dread and horror which so strongly seize our minds at the approach of a storm; and let us always look up to and trust in that God who alone performs such great marvels;—for however capable we may be of assigning the causes of thunder, according to invariable princi-

ples drawn from natural philosophy, the phenomena are not less remarkable; on the contrary, they present certain circumstances which are totally inexplicable even to the most enlightened mind. It is enough for us to know, that the nature of the air, and of the atmosphere which surrounds us, renders this phenomenon necessary; that storms, in the hands of God, are means of rendering the earth fruitful, and, therefore, they should excite us to pay a tribute of adoration and gratitude to our Creator!

JUNE XXVII.

Herrings.

About this period the herring-fishery commences on the coasts of England and Scotland; by which means the inhabitants are supplied with food during a considerable part of the year.

Let us examine what is most important in the natural history of these fish. Innumerable shoals of herrings live in the Frozen Sea, near the arctic pole; but at a certain period they quit that place, and come in multitudes to the coasts of England and Scotland. We cannot positively ascertain the cause of this emigration: some think it is to avoid whales and other great fish inhabiting the frozen seas; others imagine that the prodigious increase of the herrings occasions them to take these long voyages, and that finding themselves too numerous under the northern ice, they are obliged to separate into colonies, that those which remain may find sufficient subsistence. Perhaps, also, it is the desire of propagation, and a peculiar instinct, which leads them to the places most favourable for the increase and preservation of their race.

Whatever be the cause, however, which influences their motions, it is certain that immense shoals of herrings quit the north at the beginning of the year: for, in the month of March, the western wing of their army reaches the coasts of Iceland, and they are then so extremely plentiful, that mariners take up great quantities of them at once, with the scoops with which they water the sails. The eastern wing advances farther, into the Baltic Sea: a part of it turns towards the North Cape, sails along the coasts of Norway, and enters through the Sound

into the sea: another part gains the northern point of Jutland, then enters into the Zuyder Zee, and thence passes again through the Baltic, in order to return to the place whence it set out. But the largest detachment of the eastern wing, is that which turns to the western coast, and steers directly to the Orkneys, where the Dutch go to catch them. Towards the 8th of June, the seas in those parts are full of herrings. They then direct their course towards Scotland and England, where they fill all the bays and the mouths of the rivers with their fry. After having quitted England, they probably return to their own seas.

The prodigious multitude of these fish is truly surprising: a single herring lays at least ten thousand eggs in the sea near the British coasts. This great fecundity renders credible what is said of the Dutch fishery, where there are annually caught above two hundred millions of herrings—a fishery which supports numbers of people, and adds about twenty millions of crowns to the Dutch revenue.

It is but just that we should lift up our hearts to the almighty and beneficent Creator, who, by a guidance full of wisdom, causes these fish to fall into the hands of man. But by how many different ways does he provide for our support! All the seas, lakes, and rivers, are subservient to mankind, and contribute to our preservation.

How populous is the ocean! how many aquatic armies glide through its yielding bosom! There the king of its inhabitants sports himself; and there, amidst innumerable perils, the mariner pursues his trackless course. Directed and preserved by thee, O God of Providence, all that exist on the earth, in the air, and in the mighty waters, look up to thy hand, and are satisfied with thy goodness. And we also, beneficent Father, are fed by the numerous tribes with which thou hast peopled the ocean. For our sakes the herrings perform long and surprising voyages; and by them thou suppliest the rich and poor with a cheap and wholesome article of food. May we receive this gift with becoming gratitude, and bless that God who has formed such creatures for our profit and convenience!

JUNE XXVIII.

Eclipses of the Sun and Moon.

It is shameful, that, in an age so enlightened as ours, not only the multitude, but even those who pretend to be superior to the common people, should be still ignorant of the phenomena of an eclipse. Want of knowledge on this subject excites a superstitious dread in the minds of the ignorant, during an eclipse of the sun or moon; and the absurd practices of shutting up wells, &c. at such times, to prevent the water from acquiring a noxious quality, afford melancholy proofs of the ignorance and impiety of mankind. Let us, therefore, attempt to acquaint ourselves with this subject; not only as it is very remarkable in itself, but also as it presents us with a new occasion to glorify our Creator. An eclipse of the sun is an effect purely natural: it is caused by the shadow which the moon projects upon the earth; but this can only take place when the moon, which is an opaque body, and dark in itself, comes nearly in a direct line between the sun and our earth: it then conceals from us a part or the whole of the sun. The former is called a *partial*, the latter a *total* eclipse. Thus the solar eclipse is nothing more than the situation of the earth when the moon's shadow falls upon it; and therefore, strictly speaking, it is only an eclipse of that part of the earth where the moon's shadow falls. Hence we learn that the sun is not really darkened; it is only concealed, for the time, from us. This luminary retains its usual splendor; and all the difference is, that the rays which issue from it cannot reach us, because the moon is placed between the sun and our globe. This is the reason that a solar eclipse is never visible at the same time in all parts of our earth; for, unless the sun had really lost its light, the eclipse could not be visible at the same time in every part of the hemisphere: on the contrary, it is always greater in one country than in another, and in some places it is not visible at all.

The moon not only darkens our earth sometimes, but the latter also casts its shade upon the moon, and by that means either totally or partially intercepts the rays of the sun; and this is called an eclipse of the moon. But this can only happen when the moon is at one side

of the earth, and the sun at the opposite side, and consequently when it is a full moon. Now as this planet is really darkened by the shadow of the earth, the eclipse is perceived at the same time on all the points of one hemisphere of our globe.

Should any one inquire the *utility* of the solar and lunar eclipses, it may be replied, that to those who do not estimate natural things merely by the sensible benefits which result from them, they are of great importance. It is by their means that the true position and distance of towns and countries are known; and that we have been able to trace accurately the geographical maps of the most remote countries. Eclipses, if well observed, serve also to confirm chronology, and to direct the navigator, by showing him how far he is from the east or west.

However inattentive we may be to the importance of these advantages, they are of the greatest utility, and contribute in some degree to the happiness of mankind.

JUNE XXIX.

The Stalk of Wheat.

We see that the wheat is growing every day, and that the tender ears of corn are insensibly ripening, in order to furnish us, some weeks hence, with wholesome bread —that precious blessing with which nature rewards the labours of man! Let us cast our eyes over a single field of wheat, and endeavour to count the millions of ears which gently wave in the air; and then let us reflect on the wisdom of those laws which procure such an abundance for us. How many preparations are necessary to furnish us with this most indispensable of all food! How many progressive changes must take place in nature before an ear of corn can spring up! It is now almost ready to produce its fruit, and invites us to reflect on its construction.

When the grain of wheat has been some time in the ground, it shoots up a stalk, which rises perpendicularly, but only grows slowly, that the grain may have time to ripen. It is for very wise reasons that it grows four or five feet high, in order to preserve the grain from the moisture of the ground, which would otherwise rot it. The height of the stalk contributes also to refine the

nourishing juices which the root conveys to it; and its round form assists this operation; for, by that means, the heat penetrates equally into every part of the stem.

But how is it possible that so slender a stalk can support itself, and bear up its fruitful head without sinking under the weight, or without being beat down by the least blast of wind? The Creator guarded against this inconvenience in the formation of the stem: he furnished it with four very strong knots, which, in some measure, serve as screws to keep it firm, without taking from it the power of bending. The construction of these knots manifests the greatest wisdom. Like a very fine sieve, they are full of small holes, and through these the juices rise and the heat of the sun penetrates. These pores attenuate the juices which are collected in them, and purify them by causing them to pass through these fine strainers. The stalk is liable to be beat down by storms and heavy showers of rain, but its slenderness is its security, as it is flexible enough to bend without breaking. If it were harder and stiffer, it might certainly resist all weather; but would it then serve as a bed for the poor?

From the chief stem shoot out others not so high, whose leaves, collecting the drops of dew and rain, furnish the plant with the nutritive juices it requires. In the mean time, the ear, that essential part of the plant, forms itself by degrees. To preserve these tender sprouts from the accidents and dangers which might destroy them at the instant of their birth, the two upper leaves of the stalk unite closely at the top, both to preserve the ear of corn, and to draw to it the nourishing juices. But as soon as the stem is sufficiently formed to supply the grain of itself with proper juices, the leaves gradually dry and drop off, that nothing may be taken from the grain, and that the root may have nothing to nourish which is useless. When this scaffolding is removed, the edifice appears in full beauty. The bearded corn waves gracefully, and its points not only serve for ornament, but also as a defence against the birds. Refreshed with gentle rains, it thrives till the appointed time, and grows every day more yellow, till at last sinking under the weight of its riches, it voluntarily bends its head to the sickle.

What wonderful wisdom and power appear in the con-

struction of a single stalk of wheat. Yet we seldom pay attention to it because it is daily before our eyes. But what other proof of goodness can the Creator give us, if we be insensible to this? Ungrateful, thoughtless, man! open thy heart to the sweet sensations of joy and gratitude! As long as thou art capable of contemplating a field of wheat with indifference, thou wilt be unworthy of the food it furnishes in such abundance. Learn then to think as a man, to enjoy the noblest pleasure a mortal is capable of in this world—that of tracing thy Creator in every thing he has formed. Then only shalt thou rise above the brute creation, and approach the felicity of the glorified children of God.

JUNE XXX.

The Blight.

An innumerable quantity of insects, covering the stalks and leaves of plants, forms what is commonly termed a *blight*. These insects are nearly as numerous in their species as the varieties of plants they infest; and the singularities which they exhibit render them peculiarly worthy of our attention. What distinguishes them from any known species of animals, is, that they not only lay eggs, but also produce young ones alive. In the heat of summer they are viviparous, that is, the young ones come from the mother's womb completely formed and alive; undoubtedly, because the plants at that time furnish them with nourishment. Towards the middle of autumn they lay eggs, which are not hatched till the ensuing spring; because, if the young ones were produced sooner, they would perish for want of food. Precisely at the period when the females begin to lay, the males appear; which seems to indicate that their existence was not necessary before. This supposition is fully confirmed by many experiments. If one be taken at the moment of its birth, and shut up in a glass by itself, it will, thus sequestered, bring forth another like itself, when it acquires a certain degree of growth; and it will, at the end of a few days, be surrounded by a numerous family. If the experiment be repeated on one of its young, and even for many generations, the result will still be the same.

Let us observe another singularity. In some species,

of insects the males have wings, and the females have none; but in these both sexes are alike; either both produced with them, or both otherwise. Those with wings are so small in comparison with the others, that they walk over them as they do upon fruit. This remarkable instance of what may be called singularities in nature, an instance so contrary to common rules, leads us naturally to inquire, whence these peculiarities proceed, and what could induce the Creator to deviate sometimes from the common laws? To answer this question in a satisfactory manner, we ought to be able to take in the whole of all that is created; to comprehend at the same time all the parts of the immense kingdom of nature, and the connexion between each, before we can be capable of judging to what, or how far, any thing can be useful or hurtful to the whole.—But so deep a knowledge of nature being denied to our weak faculties, let us content ourselves with general arguments. In the first place, God shows us, by these singularities, the command he has over all nature: he is the Supreme Lawgiver, who assigns to every being the law he is inviolably to observe. He, to whom every being is subject, has a right to prescribe such and such rules; and he has also the power to suspend laws, and to make whatever exceptions he pleases. Secondly, we find a great variety in nature; which affords us opportunities, not only to rejoice in the contemplation of it, but to admire the glory of the Creator. It is easy to conceive how much the exceptions to the general rules increase this variety, and, consequently, the pleasure of the observer, as well as the admiration of the Author of nature. Thirdly, experience teaches us, that the objects we have daily before our eyes become familiar to us; and their reiterated impressions leave us cold and insensible. The glorious scene of nature itself does not always interest us; because we have taken the habit of lightly passing over things which we see continually. Therefore, every singularity, every extraordinary phenomenon, is a fresh inducement to contemplate the works of God, and serves to rouse us from our indolence. Fourthly, and lastly, the singularities of the natural world, which, far from hurting the perfection of the whole, enter into the plan of Divine Wisdom, teach us, that the singularities of the moral world, and the fate

of mankind, are equally under the direction of an all-wise Being, who will so order all things, that his holy name may be glorified for ever.

Hymn to the Author of Nature.

How great art thou, O Lord God of hosts! The heaven of heavens is thy throne, and the earth proclaims thy divine majesty. By thy word they were created, and thou hast fixed them in the immensity of space.

Thy praise resounds in the pealing thunder, and thou walkest, in formidable array, on the wings of the lightning. We perceive thee in the splendor of the sun, and recognise thy skill in the flowers which enamel the fields.

Who is it that rides on the whirlwind, that grasps the thunder in his right hand, and commands the lightning to blaze through the forests? It is thou, O Jehovah! Thousands of worlds glorify thy power, and at thy threatening they flee away, assume a new form, or are completely annihilated!

The whole creation is a temple erected to thy praise, and millions of celestial and terrestrial choristers adore thee, from the seraph who bows before thy throne, to the insect sporting in the solar beams. Creatures which now exist, and those which are in embryo, are all under thy government, and submit to thy divine authority.

What is *man*, that creature of earth, that thou shouldest set thy heart upon him? O God, in whom I put my sole trust, I bless and praise thee for all the mercies I have received from thy bounteous hand.

Thou hast placed me in a distinguished situation: the inhabitants of the sea, of the earth, and of the air, are put under me: all the creatures here below acknowledge me for their sovereign.

O God! how magnificent is thy name! thy praise resounds to the limits of the creation; thy works proclaim thy glory from eternity to eternity.

END OF THE FIRST VOLUME.

R. Tullis, printer, Cupar.

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